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DEPARTMENT OF AGRICULTURE

QUEENSLAND AGRICULTURAL JOURNAL

In a North Queensland Garden.

LEADING FEATURES

Two Novel Agricultural Implements

Squirter Disease In Bananas

Sampling for Butterfat Tests

Requirements for Milk Supplying Farms

Sale of Seeds—Regulatory Legislation

Empire Preference on Rural Products—What it has meant to Queensland

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Volume 64 1 JUNE, 1947 Part 6

Event and Comment.

Farm Economy in Other Countries.

CONJOINTLY with the Commonwealth Government, Australian dairying organizations arranged for an overseas visit last year by Messrs. G. C. Howey (Member of the Australian Dairy Produce Board and a director of the Commonwealth Dairy Produce Stabilization Committee) and Chris. Sheehy (Commonwealth Controller of Dairy Products and General Manager of the Dairy Produce Equalization Committee). The primary purpose of their mission was to assist in the negotiations between the Commonwealth and the British Ministry of Food in respect of butter and cheese values under the existing long-term export contract. Other objects included a study of trends in relation to milk production and usage and farm economics generally in the British Isles, United States of America, Canada, Denmark and other European countries. An account of this important mission has now been published in the form of a comprehensive report of particular interest to all engaged in the dairy industry.

In a chapter of the report dealing with farm economics, it is remarked that in all the countries visited farming is usually conducted as a "mixed" undertaking. Consequently, while the "profitability" of a property as a whole may be determined, it is most difficult if not impossible to fix the actual cost of producing one single commodity, such as milk; in some countries only one-third of the total farm income is derived from darying. It was found that except on some large estates on which outside labour is employed the basis of milk production is the

family unit. Generally, more labour is required than is customary in Australia because of the necessity of housing cattle during the cold months of the year and of growing and storing winter feed. In most of the countries visited hired labour is scarce and wage scales are on higher bases than in Australia; but as cows have to be tended on seven days a week, the final burden rests on the farmer and his family. Stock and land values are generally much higher than in Australia and, coupled with additional labour costs of herd management, are reflected in higher production costs. Average herd numbers are low, ranging from six to sixteen cows. Published figures of average production of milking cows were deemed to be misleading, but from inquiries made the individual cow average in most of the dairy countries varied from 500 to 750 gallons a year even in the existing conditions of protein-rich fodder shortage.

In the main dairying districts of North America, farm lands are sown approximately in the proportion of one-third pastures, one-third hay, mostly lucerne, and the remaining third cereals—maize, wheat, oats or barley—while in some sections soy beans are extensively grown. Harvested crops are threshed and the grain stored for winter feeding of farm stock, thus ensuring a balanced agriculture on each holding.

In the chief European dairying countries milk production is associated with crop growing in general diversified farming practice.

In practically all countries in which observations were made cattle are housed during winter, which may last from four to seven months according to the severity of the climate. This obviously results in high production costs, because of the necessity of providing large buildings for fodder storage and the housing of stock and the extra labour involved. The fodder conserved and straw for bedding must be produced during the summer season.

Dairy farm mechanization is extending, particularly in North America and Great Britain; a wide range of equipment is now available although the supply position has been difficult. While most small dairy herds are still usually milked by hand, the use of milking machines is steadily increasing, contributing factors being the shortage of labour and doubling of wages for farm help. Stress is therefore placed on the *output per man* rather than the output per cow or per acre. In the usual type of tie-up stall the bucket plant is the most popular, while with some of the larger herds where a special milking shed, or "milking parlour," is provided the overhead milker is used; to this may be added the recorder plant, which consists of a glass container attached to each unit by which the weight of milk from each cow is automatically recorded. Steam sterilization of dairy equipment is favoured by the British farmer, while the hypoclorite method is more popular in North America. In Britain and the Continent the surface cooler, either corrugated or tubular, is preferred, while in North America the favoured method is immersion of the can in cold water because of less risk of contamination. Electric power is an increasing factor in dairy farm economy.

The report under review contains much other interesting and useful information and may be accepted as a valuable contribution to our knowledge of the science, practice and economy of dairy production. It is well worth close study by all engaged in the dairy industry.

Two Novel Agricultural Implements.*

G. BATES.

Introduction.

IN the struggle to keep down rising costs of production, growers are constantly on the lookout for any method which will enable them to do a particular job more easily, and this has been doubly so during the war years when farmers, like everyone else, were faced with an acute manpower shortage.

Many cane farmers have given up horse work altogether and are using high clearance tractors, which certainly have done a good job. However, there are many who still do most of their cultivation with horses and it is these who will be interested in the methods adopted by T. J. Trembath, of Babinda. With a gross area of 158 acres, this grower was faced with the problem of cultivating and keeping cane clean, with little or no man-power.

After some experimental work, Trembath had two implements patented—a "scratcher" for weeding young plant and ratoon cane, and a "scarifier" for inter-row cultivation. Used in conjunction with each other, and under conditions prevailing on his property, they have been highly successful and have kept down hoe work to a minimum. During the past two years two permanent men, together with casual labour costing £300 per annum, have performed all the farm work with the exception of cane cutting. This contrasts vividly with other years when up to 15 men have been employed chipping.

The Scarifier.

The scarifier consists of a rectangular base of wood having a number of tine bars pivotted to the bottom thereof and projecting behind the rear edge. These tine bars have straight shanks and curved ends, with feet attached. Clamping bars are provided on the base plate to hold the tine bars in position. The seven tine bars are of various lengths and are made from 1¾in. spring steel and are set in V formation. The spread of the tine bars is adjustable, according to the width of the cane row. The shafts are mounted obliquely on the top of the base plate and there are securing chains on the ends of the shafts to secure to the collar hames of the horse (Figs. 80 and 81).

* Paper presented at the Bundaberg Conference, Q.S.S.C.T., April, 1946, and reprinted from *The Cane Growers' Quarterly* (Bur. Sug. Expt. Stns., Dept. Agric. & Stock, Q.), Jan., 1947.

The old type of scarifier has always seemed to the writer to be a clumsy implement which even had to be held up by the operator. The one under discussion is so constructed that it follows closely on the horses' heels and balances itself, requiring no handling by the operator. It is this feature which makes the implement so valuable, for one man can handle up to five independent units, and so scarify up to five rows simultaneously. This is a distinct advantage in a climate of uncertain weather and high rainfall, where weeds grow quickly and it is necessary to make the most of fine weather. On a recent demonstration the writer witnessed a team of five units scarify a 4·7 acre block in 55 minutes, the length of the rows being 15–16 chains. Fig. 82 illustrates a group of six units. The horses are turned into the rows independently and are not even coupled together. It is customary to place the fastest horse in the middle where it can be more easily controlled with the reins. The horses are quick to learn and soon it is only necessary to start them off, the reins being trailed loosely behind.

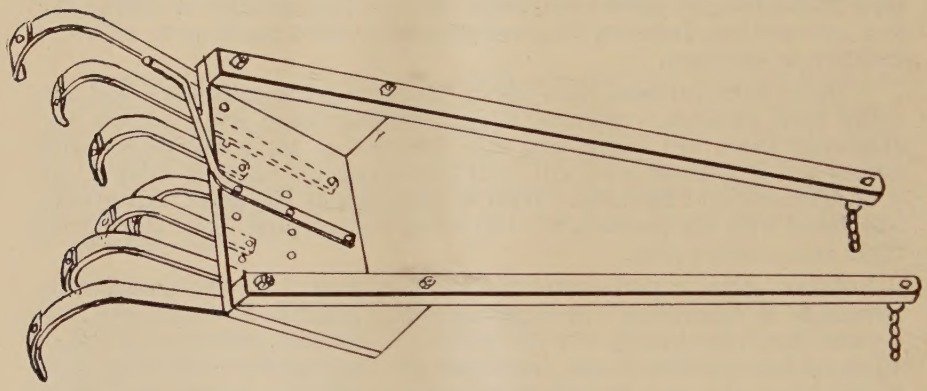


Plate 101.
A DIAGRAM OF THE SCARIFIER.

The weight of this scarifier is in the vicinity of 100 lb. and farmers who use them say that the draught is slightly heavier than with the conventional type of scarifier. Horses, however, get a short spell at the end of each row while turning round and it is not usual to have a change of horses waiting on the headland. The depth of cultivation may be increased by using ballast which can be placed on the base plate. This, however, is seldom needed. The height of the base board is 14 inches, giving ample clearance so that the implement will not clog up with half burnt tops in the event of a bad burn. This clearance is also an advantage in rough country, having large stones. For scarifying plant cane, where the centre of the drill is in the shape of a mound, the two outside tines are made longer than the others so as to cultivate close to the plant.

The Scratcher.

The scratcher consists of an angle iron frame 6 ft. 6 in. x 8 in. to which is attached a pair of shafts. At each end of this framework a set of spring tines is attached, similar to those used behind a Cotton King and other types of standard cane cleaners (Fig. 83). For weeding young plant cane six to eight tines are used, depending on the width of the open drill, but for ratoons some tines are taken out according to the density of the stooling. With this implement it is customary to use three units, each scratching two rows of stools. The weight of the implement is about 80–90 lb. and ballast is used if necessary.

Plate 102.
DEPICTING THE SCRATCHER AT WORK.

With the intelligent use of these two implements, one to clean the soil between the stools and the other for inter-row cultivation, cane can be kept clean, and hoe work reduced to a minimum. It is admitted that certain soils—such as the red volcanic soils and those of a sandy nature—lend themselves admirably to this type of implement, but they are valuable also on the heavy buff alluvials according to farmers who use them. The whole secret of success is to put these implements over the land, *before* the weeds appear, and where such a large area can be covered in so little time there is no excuse for not doing so.

Recently there have been other ideas brought forward in connection with the scratcher; one modified implement has been mounted on wheels with a lever to control depth. However, with the implement described above, one of the main features is the low capital cost, being in the vicinity of £7. This means that a farmer of moderate means may own a set without any high capital outlay. While the more elaborate implements perform work of a similar character, they are, of course, necessarily higher in price.

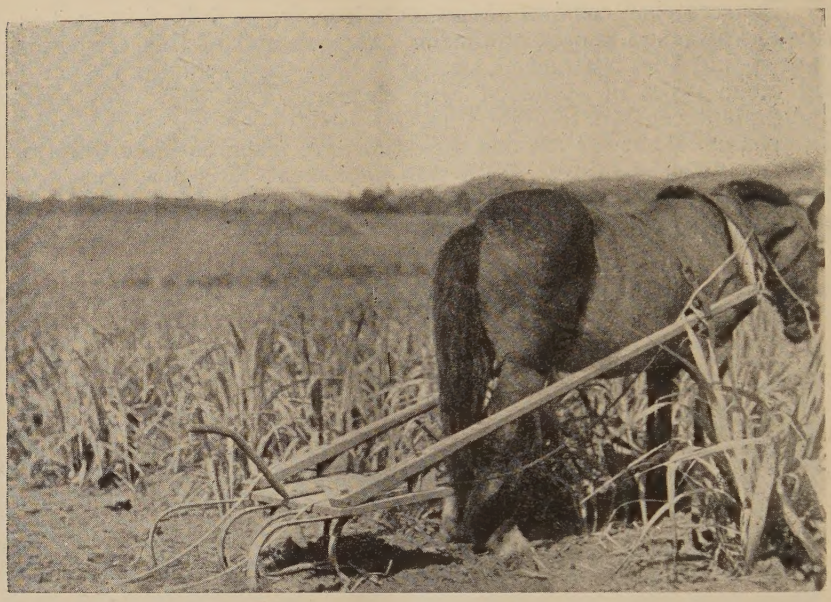


Plate 103.
A VIEW OF THE SCARIFIER READY FOR OPERATION.

Plate 104.
ILLUSTRATING A GROUP OF SIX SCARIFIERS IN THE FIELD.

PLANT PROTECTION

Squirter Disease in Bananas.

J. H. SIMMONDS, Officer in Charge, Science Branch.

EACH year reports come to hand of depression in banana prices due to the appearance of squirter in the southern markets. Growers are prone to underestimate the seriousness of this disease as they rarely see an infected fruit, unless it is an occasional one in bananas left to ripen in the packing shed.

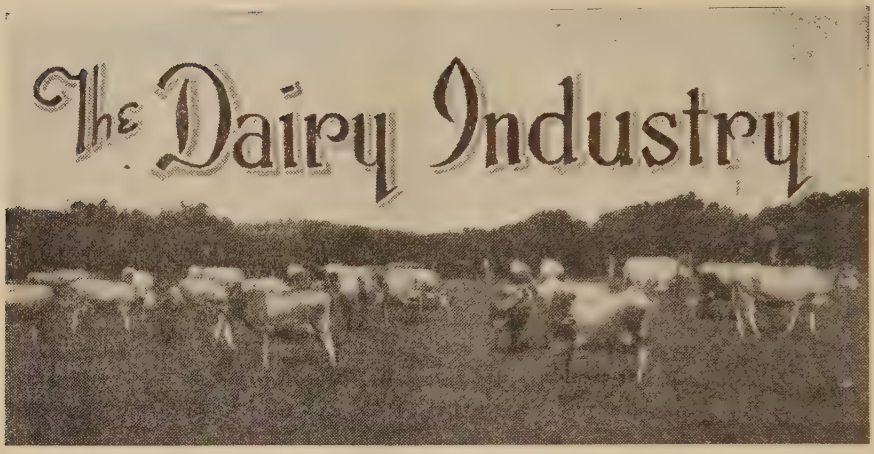
Squirter is caused by a fungus which infects the fruit through the broken stalk end, but starts to actively rot the fruit only after the latter has reached the "sprung" stage. A dark watery rot is set up along the centre of the fruit, which, when the rot is well advanced, may be squeezed out in a stream from the stalk end—hence the name. It is almost impossible to detect this rot from the external appearance of the fruit, so once fruit of a certain brand is known to be affected this brand is difficult to dispose of so long as squirter is about.

Fortunately, experiments have shown that, by the use of the fungicide Shirlan W.S., infection of the fruit can be prevented by destroying the fungus before it enters. The procedure is a relatively simple one compared with the control of many other fruit diseases.

The bunch is first separated into "singles" or part hands and the fruit are then immersed for half a minute or more before packing in a solution of Shirlan made up at the rate of ½ lb. Shirlan W.S. to 30 gallons of water, to which a wetting agent such as Agral or Wetsit has been added. Alternatively, the fruit may be packed and the case then immersed in the solution held in a suitable vat or drum. With the latter method care must be taken that the liquid thoroughly penetrates the case and no air pockets remain. A drainage tray should be provided to conserve the dipping solution.

Squirter is normally seasonal in its occurrence and appears only during the cooler months; that is, from about May to October. During this period, for their own sake and for the good of the industry as a whole, banana growers would be well advised to treat their fruit as described above. This treatment in addition will reduce the amount of black end—some of which is caused by the same squirter fungus—so that a more attractive fruit is marketed.

Shirlan W.S. may be obtained locally at about 12s. 8d. a lb. The cost of the wetting agent is a minor consideration.



Sampling for Butterfat Tests.

E. B. RICE, Director of Dairying.

RELIABLE sampling and proper care of samples are of the utmost importance in dairy factory work. Unless every precaution be taken to ensure that the sample is truly representative of the bulk the results of any test or analysis are misleading and worthless and, moreover, may cause serious lack of confidence by the producer in the factory. A full appreciation of the importance of sampling is most necessary for dairy factory staffs.

Sampling Milk.

(*a*) *Individual Cow Samples.*—In taking a sample of the milk of an individual cow, mix the milk by pouring it from one vessel to another several times. Always take enough milk to enable a duplicate test to be made if necessary (about 6 oz.). As the fat tests at the morning's and evening's milking vary, separate samples are necessary unless a composite sample from the two milkings is taken. This may be obtained by using a graduated pipette and taking a number of millilitres (c.c.s.) for each pound of milk at each milking. A suggested rule is: 2 ml per lb. milk for cows giving over 20 lb. daily; 3 ml. per lb. for cows giving between 15 lb. and 20 lb. daily; and 4 ml. per lb. for cows yielding between 10 lb. and 15 lb. daily.

(*b*) *Individual Can Samples.*—These may be taken simply by thoroughly stirring the milk with a rotary motion, by means of a combined metal stirrer and sampler, and dipping the sample straight into a sample bottle. Patent milk sampling tubes, of which there are several kinds, enable a small column from the top to the bottom of the well-stirred milk in the can, and thus a strictly representative sample, to be taken. A plain glass tube may be used by inserting it perpendicularly to the bottom of the can, pressing a finger firmly on top, and then transferring the sample to a sample bottle. In sampling milk when the fat is partially churned, warm to about 110°F., long enough to melt the fat, vigorously shake, and at once carry out the fat test.

(c) *Composite Milk Samples.*—It is the usual practice at cheese factories to keep a composite sample of each supplier's milk. This avoids the necessity for daily fat testing. To prevent the souring of the composite sample a small quantity of preservative (0., ml. of formalin usually) is added to each bottle each week prior to the reception of the samples. The volume of the sample taken daily should strictly be proportionate to the bulk. As, however, there is usually not a sudden variation in the quantity and quality of the milk delivered daily by each producer, one ounce may be taken daily for the sample. To facilitate sampling, the 8 oz. composite sample bottles are marked with a glass line to denote each ounce of capacity. Generally, the sample is taken from the milk after it is tipped into the weighing vat, a small dipper being used for the purpose. Where dip sampling is practised it is necessary to stir the milk in the weigh vat, or the cans, before it is tipped. A "drip" sample is more accurate than a dip sample. This is conveniently secured by placing a bottle beneath a fine hole drilled in the fluming leading from the weighing vat. As the milk flows along the fluming some is collected in the bottle and one ounce is then added to the composite bottle. Care must be taken to add only one ounce. After adding the fresh sample the bottle should be thoroughly shaken (with a rotary motion) to ensure even distribution of the preservative and mixing of the fat with the remainder of the sample and so preventing it from adhering to, and drying on, the side of the bottle.

Composite samples should be kept under lock and key, in a cool, dark place on or convenient to the factory platform. Composite sample bottles must have wide necks and tightly fitting stoppers (preferably rubber or ground glass), be durable, easy to clean and properly marked to identify each sample.

Preserving Composite Samples.

To prevent souring of composite samples, certain chemicals are used.

Formalin is mostly used in Queensland and, provided it is not used in excess, is satisfactory. In excess it hardens the milk casein and causes some difficulty in Babcock testing. It cannot be used if casein is also to be determined on the sample of milk. 0.5 ml. suffices for an ordinary composite test bottle or ½ pint of milk.

Potassium bichromate is not very satisfactory as it also hardens the casein of milk, is difficult to dissolve in milk, and needs a fair amount to prevent souring (half a gram per composite sample bottle or ½ pint of milk).

Mercuric chlorine (corrosive sublimate) may be used for preserving samples to be tested for casein as well as fat. It is sold as coloured tablets and is readily soluble in milk. As it is a strong poison, the container should be plainly marked in red letters with the word "POISON" and stored in a safe place. One tablet is used per composite test bottle or half pint of milk.

Sampling Cream.

Cream samples from each day's delivery are tested separately in Queensland butter factories. Composite sampling is not carried out because of the difficulty of sampling sour cream, unequal number of separations in different deliveries, and the uneven consistency throughout the mass of many farm creams.

Before sampling, the cans of cream are well stirred with a tinned brass stirring rod the bottom portion of which consists of a saucer-like metal attachment for drawing the sample. In the event of a supplier's consignment consisting of more than one can of cream, the usual (though not strictly accurate) procedure at butter factories is to dip a small portion of the stirred contents of each can into the sampling mug. Only if the portion of the sample taken from each can is proportional to the weight of cream in all cans in the consignment is such a sample truly representative. Some factories test a sample taken from every can. Greater accuracy is thus secured than by assessing the commercial butter content from a mixed sample from a number of cans. As, however, the commercial butter content is calculated from the total weight of cream in the consignment and the mean of the fat tests of the different cans, the true content of commercial butter is not recorded. This would only be ensured if the commercial butter content of each can of cream were computed separately from the weight of the cream and its fat content.

A Note on Farmers' Samples.

Any farmer who sends a sample of milk or cream to a laboratory, or elsewhere, for testing must be warned against the using of the result as a check against factory tests. A sample of night's milk or morning's milk, or even the mixed milk, may vary in butterfat test from a weekly composite sample, which is taken at a cheese factory. Similarly, a sample of cream, unless truly representative of the number of separations included in a consignment sent to a butter factory, will differ from the factory test.

Dairy Officers of the Department of Agriculture and Stock are always willing to carry out check testing on behalf of any farmer and in this way check testing may be carried out with satisfaction to all parties concerned.

Dairy Produce Act in Relation to Sampling.

Regulation No. 153 provides for a representative sample to be taken in all cases where dairy produce is sampled for analysis or testing.

Regulation No. 149 provides for samples to be taken of milk or cream supplied to factories, and the keeping, for certain periods, of samples after testing for butterfat. Samples taken before noon are to be retained until 3 p.m., samples taken between noon and 3 p.m. are to be held until 5 p.m., and samples taken after 3 p.m. are to be held until 11 a.m. next day. An inspector may, however, order any samples to be kept for a longer period than just indicated.

Regulation No. 165 permits a representative sample, which shall be proportionate to the quantity of milk received to be taken from each individual supply at cheese and condensed milk factories and placed in a composite-sample bottle. The composite samples are to be tested for butterfat not less than four times monthly, at approximately equal periods. The composite-sample bottles are to have a permanent number marked on them, to be kept in a cupboard which shall be locked when not in actual use, and each bottle is to correspond with the number allocated to the supplier on the platform sheet.

Regulations No. 150 and No. 165 empower an inspector to sample and test any milk or cream at a factory and, if deemed necessary, to correct or order the factory results to be altered.

Requirements for Milk-supplying Farms.

C. R. TUMMON, Dairy Adviser.

SOME farmers are of the opinion that, in order to change over from cream to milk supply, much alteration is needed to dairy buildings, equipment, etc. The only major additional item required for milk supply is a suitable milk cooler. Though the *Dairy Produce Act* sets out certain regulations to which all dairies should conform and does not discriminate between milk and cream suppliers, it is necessary for certain minimum requirements to be satisfied before a farmer can produce milk for the liquid milk market. These are:—A milking shed with an impervious floor, adequate water supply at the dairy, approved source of hot water, a wash-up trough, and a draining rack upon which to deposit cleansed utensils.

The following notes are offered as guidance in the erection and equipping of milk-supplying dairy farms:—

Milking Shed.

The type of bails or milking shed is optional, but the walk-through, double-bail shed is most popular and recommended. It is easily adapted to the installation of milking machines and avoids the upsetting of individual cows during milking, which is a definite advantage over some of the other crush types of bails. The milking shed should be a sound and suitable structure, having concrete floors and drain—the latter extending 30 ft. from the bails. If machines are in use, or intended to be used, a 6 ft. air space—walled on both sides and ventilated at the ends—should be provided between bails and separator room to house the engine and pump. This avoids congestion in the separator room, keeps oil off the separator room floor, and prevents the absorption of smoke, fumes, etc. by the milk. The separator room or milk room should be sufficiently large to allow ample room for the separator, washing-up vat, sterilizer, and utensil and can racks.

When suitable buildings are constructed, the farmer should go one step further and have them painted. Bails should be tarred or painted some dark colour up to about 3 ft. from the floor and the remaining top portion painted white. The whole of the separator room should be painted white. This improves the appearance of dairy buildings, preserves the wood, and makes cleaning of walls, etc. easier.

Water Supply.

An abundant supply of water is one of the most important features of a modern dairy. It is required for the washing down of floors, cleaning of utensils, and the cooling of the milk. The small tank, which is the sole source of supply at many dairies, is quite inadequate. A water supply laid on from creeks, dams, wells, etc. is probably the best method of providing an ample supply, but failing this, several large tanks should be installed for rain-water catchment.

Cleansing Facilities.

A 12-gallon set-in copper is prescribed for supplying hot water on dairies not using milking machines, while it is necessary to have a steam sterilizer with piping or steam hoses to connect up to the pipe lines of

the machines on any dairy farm using a milking machine. A suitable washing-up trough and rack for holding utensils, cans, &c., are also required.

Straining.

Cotton-wool filter discs to be used for straining the milk are necessary on every milk-supplying dairy farm. They remove much more fine sediment than ordinary wire-gauze strainers. If a wide-mesh gauze strainer is used (about 1/16th in. mesh) in conjunction with filter wads, the difficulty often experienced in getting milk to run through the strainer will be avoided.

Cooling Milk.

Cooling is necessary for milk intended for the liquid milk trade. This serves the dual purpose of aerating the milk to minimise some feed flavours and reducing the temperature to retard the multiplication of bacteria.

There are all sorts of coolers in use, but success is achieved by the tubular types used in conjunction with a tower cooler—a wooden condenser tower erected over a shallow concrete tank—as described in this Journal for May, 1946. The water is circulated by means of a small centrifugal pump over the tower and then through the tubular cooler, over the outside of which the milk flows.

Holding of Milk.

While the milk is awaiting pickup by the carrier it should be kept in as cool a place as possible. If left on the roadside, a well-ventilated shelter shed should be provided. This keeps the direct rays of the sun off the cans and assists in enabling the milk to arrive at the factory at a lower temperature than if the cans were not protected from the sun.

It may be argued that good milk can be produced without erecting a milking shed of approved design and providing the equipment mentioned. Admittedly the human element is an important factor in clean milk production, but the provision of a good building and equipment makes it a much easier job to produce a good article and to maintain conditions befitting the production of such an important food as milk. The progress of the dairy industry is bound up with the type of buildings and equipment on the individual farms, and dairy buildings soundly constructed, well equipped, and of good appearance, would be a definite step towards the uplifting of the dairy industry in this State.

RADIO TALKS TO FARMERS
(Australian Broadcasting Commission)
4QR AND REGIONAL STATIONS
THE COUNTRY HOUR—Daily from 12.15 to 1.15 p.m.
THE COUNTRYMAN'S SESSION—Every Sunday at 9.10 a.m.

Dairy Field Day at Conondale.

ARRANGED by the district branch of the Queensland Dairymen's Organisation in association with the Department of Agriculture and Stock, the farm field day at Conondale on 1st May was an unqualified success. Mr. F. Fleiter's well-improved property was the venue and over 60 farmers, including visitors from Maleny and Obi Obi, were in attendance under the chairmanship of Mr. J. J. Ahearn.

Mr. Fleiter has a herd of Australian Illawarras of which 90 pure-bred and grade cows are milked daily. In his milking shed is a 3-unit milking plant, a steam boiler, and other installations and equipment regarded as essential in modern dairy practice. The assembly yard, walk-through doorways, and gateways are concreted and other facilities are evidence of the application of sound dairy principles. A large hay and feed shed with stalls for 48 cows is under construction and a silo will be added later.

The day's proceedings included lectures and demonstrations by field officers of the Department of Agriculture and Stock. Mr. R. Haseler, Adviser in Agriculture, addressed the gathering on fodder conservation and the maintenance of soil fertility. Types of silos, machinery for harvesting and handling ensilage crops, the use of legumes in the balancing of rations and their value as soil builders were all covered in the course of a comprehensive and lucid lecture. The assistance given by the Department of Agriculture and Stock also was stressed.

The value of herd testing and what it connotes in profitable dairy practice was clearly expounded by Mr. S. E. Pegg, Senior Dairy Adviser. He stressed the need for increased production per cow and outlined the main points of the departmental herd improvement plan of which herd testing is the basis. This plan involves a departure from the milk sampling method and the adoption of a system of herd testing units and the application of results to sire surveys. The farmers present were greatly interested and assurances of a desire to co-operate with the Department were given. At a meeting to be held soon, the district branch of the Q.D.O. will consider the formation of local testing units on the lines in operation in the Southern States.

An instructional high light in the day's proceedings was a post mortem on the carcase of a cow by Mr. R. McLellan, Veterinary Officer. He dissected and explained the functions of all the parts in the cow's "interior economy"; and demonstrated methods of treating mastitis by injection of affected quarters of the udder with sulpha drugs, and in the use of penicillin. Contagious abortion, its causes and effects, and the uses of "Strain 19" vaccine in preventive treatment also were discussed. The lecturer was kept very busy answering a wide variety of questions on veterinary matters.

The general discussion after each lecture was evidence of the keen interest of all assembled. On the motion of Mr. Ahearn, seconded by Mr. P. Daley (Maleny) the speakers were thanked for their able addresses. An expression of cordial appreciation of the generous hospitality of Mr. and Mrs. Fleiter, and of their public spiritedness in making their fine property available, was a happy ending to a successful field day.

PRODUCTION RECORDING.

List of cows and heifers officially tested by officers of the Department of Agriculture and Stock, which qualified for entry into the Advanced Register of the A.I.S., Jersey, and Guernsey Societies' Herd Books, production records for which have been compiled during the month of April, 1947. (273 days unless otherwise stated.)

Animal.	Owner.	Milk Production.	Butter Fat.	Sire.
		Lb.	Lb.	
AUSTRALIAN ILLAWARRA SHORTHORN.				
Mature Cow (Standard 350 lb.).				
Alfa Vale Star 10th	W. H. Thompson, Nanango	13,099·4	556·769	Penrhos Pansy's Pride
Rhodesview Kitty 16th	W. Gierke and Sons, Helidon	13,964·9	533·373	Fairvale Major
Rhodesview Beauty 22nd	W. Gierke and Sons, Helidon	9,413·15	468·923	Fairvale Major
Bileena Butterfly 3rd	C. K. Roche, Warwick	9,837·75	356·684	Tara Governor
Senior, 4 Years (Standard 330 lb.).				
Cress Lea Pride	A. Lohse, Degilbo	8,745·85	369·237	Blacklands Excellent
Senior, 3 Years (Standard 290 lb.).				
Mel Merle Empress 3rd	C. K. Roche, Warwick	8,229·85	347·26	Rhodesview Primroy
Mt. Camp Thelma 34th (174 days)	Madge Bros., Southbrook	7,773·88	291·906	Rosenthal Red Major
Junior, 3 Years (Standard 270 lb.).				
Pilton View Thelma 4th	C. K. Roche, Warwick	10,701·85	364·026	Sunnyview Myrtle's Renown
Fairvale Doris 7th (184 days)	W. C. Henschell, Yarranlea	8,306·7	363·541	Bingleigh Jean's Monarch
Rhodesview Carnation 24th	W. Gierke and Sons, Helidon	7,850·85	323·751	Fairvale Major
College Raceme 4th	Q.A.H.S. and College, Lawes	6,825·35	298·609	Alfa Vale Pride 3rd
Senior, 2 Years (Standard 250 lb.).				
Yarranvale Gentle	W. D. Davis, Chinchilla	7,703·75	344·62	Trevor Hill Bosca
College Rascal 15th	Q.A.H.S. and College, Lawes	6,414·35	292·881	Alfa Vale Pride 3rd
Bileena Buttercup 12th	W. F. Hemmings, Murray's Bridge	7,470·1	265·529	Tara Governor
Fairvale Minerva 3rd (161 days)	W. Henschell, Yarranlea	6,524·4	257·695	Bingleigh Jean's Monarch
Junior, 2 Years (Standard 230 lb.).				
College Thorn 6th	Q.A.H.S. and College, Lawes	8,541·75	362·952	Alfa Vale Pride 3rd
JERSEY.				
Mature Cow (Standard 350 lb.).				
Brookland Cunning Drop	W. S. Conochie, Sherwood	10,881·65	693·83	Englorie Cunning Victor
Mayfair Roseslip 5th	J. W. Carpenter, Helidon	7,718·55	426·161	Trecarne Golden King 2nd
Glenview Rochette	F. Eager, Petrie	8,218·75	400·881	Trinity Governor's Hope
Senior, 3 Years (Standard 290 lb.).				
Brookland Merry Primula	W. S. Conochie, Sherwood	6,581·15	320·5	Bulby Maria's Keepsake

JUNIOR, 3 YEARS (STANDARD 270 LB.)

Nanfale Brown Belle	R. J. Browne, Yangan	7,341·4	383·624	Nanfale Count's Prominence
Mayfair Beauty 7th	J. W. Carpenter, Helidon	5,504·2	337·026	Trecarne Golden King 2nd
Glenrandle Luna	P. Kerlin, Killarney	5,864·9	332·417	Beligarth Stylish
Grasmere Victorious Dove	F. Z. Eager, Neurum	4,043·25	275·444	Navua Victorious Samaritan

SENIOR, 2 YEARS (STANDARD 250 LB.).

Lermont Posy 3rd	J. J. Ahern, Conondale	7,950·45	409·409	Selsey Samares Hallmark
College Floss 6th	Q.A.H.S. and College, Lawes	5,320·2	282·683	Mornmoot Roi
Tecoma Emerald	A. Semgreen, Coolabunia	4,616·8	274·357	Trinity Golden Royal
Westbrook Tulip 134th (204 days)	Farm Home for Boys, Westbrook	5,340·55	264·078	Mornmoot Clementine's Valour

JUNIOR, 2 YEARS (STANDARD 230 LB.).

Gem Cream Lass	W. Bishop, Kenmore	8,056·15	405·531	Gem Prince Prudence
Westbrook Valient	Q.A.H.S. and College, Lawes	5,619·2	281·661	Mornmoot Clementine's Valour
Brookland Regal Maple Leaf	W. S. Conochie, Sherwood	5,074·4	286·449	Brookland Regalia
Westbrook Sultane 9th (219 days)	Farm Home for Boys, Westbrook	5,219·05	238·377	Westbrook Ambassador 52nd

GUERNSEY.

MATURE COW (STANDARD 350 LB.).

Laureldale Violet	W. A. K. Cooke, Maleny	10,606·25	511·715	Linwood Favour

SENIOR, 4 YEARS (STANDARD 330 LB.).

Laureldale Vida (252 days)	W. A. K. Cooke, Maleny	10,312·5	497·771	Minnamurra Topsy's Sequel 2nd

JUNIOR, 2 YEARS (STANDARD 230 LB.).

Laureldale Lorna	W. A. K. Cooke, Maleny	6,313·95	288·978	Minnamurra Topsy's Sequel 2nd

MARKETING

Sale of Seeds—Regulatory Legislation.

F. B. COLEMAN, Standards Officer.

PROTECTION of the purchaser of seeds for sowing and the prescription of certain standards with which the seed must comply is provided for in *The Seed Acts of* 1937 *to* 1941. Seeds not up to the standards prescribed are liable to be seized by inspectors under *The Seeds Acts,* and if the material is not brought up to standard, such as by the removal of weed seeds and other foreign matter, destruction of the goods in question may follow. This would represent a total loss: further, the seller would be liable to prosecution.

To set out simply and clearly the definitions and standards stipulated in the Acts and Regulations the following notes have been prepared:—

Vendor.—A vendor under the Acts is any person who sells or offers or exposes for sale or contracts or agrees to sell or deliver any seeds for sowing. A license to sell seeds is not required.

Efficient Seed-cleaning Machinery.—The Regulations do not apply to seeds sold by the actual grower direct to any vendor in possession of one or more efficient cleaning machines, for the purpose of the seeds being cleaned and graded before being offered for sale as seeds for sowing.

Examination of Samples.—Provision is made for the examination of samples at the Seed Testing Station, Brisbane, upon payment of the prescribed fee; seeds purchased for sowing, and not resale, are examined free. After examination a certificate of analysis is issued. An explanatory note on the certificate is included on page 342 of this article.

Labelling.—At present it is not necessary to label any seeds except those sold in made-up packets on the outside of which the following particulars should be legible and indelibly marked:—

(*a*) The full name and address of vendor or packer;

(*b*) The kind and variety or strain of such seeds;

(*c*) The date after which the contents should not be used.

Certified seeds are required to be sealed and labelled, but are not dealt with in this article.

Standards of Purity and Germination.—The Regulations under the Acts prescribed the maximum proportions or amounts of inert matter, weed seeds, and other crop seeds that may be present in the different kinds of seeds for sowing and the minimum germination. A copy of the Regulations may be obtained free on application to the Department of Agriculture and Stock, Brisbane.

Prohibited.—The principal totally prohibited seeds commonly found in Queensland include—

Carthamus lanatus	Saffron thistle
Chrysanthemum leucanthemum ..	Ox-eye Daisy
Convolvulus arvensis	Bindweed
Cirsium arvense: Syn. *Cnicus arvensis*, Syn. *Carduus arvensis*	Creeping Californian, or Perennial thistle
Cuscuta spp.	Dodder
Datura spp.	Thornapple, Datura
Ipomoea spp.	Morning Glory, Bell vine
Melilotus indica	King Island Melilot, Hexham-scent
Raphanus Raphanistrum ..	Wild radish or Jointed charlock
Rapistrum rugosum	Turnip weed
Salvia reflexa	Mintweed
Silybum marianum: Syn. *Carduus Marianus*	Variegated thistle
Sonchus arvensis	Perennial sow thistle
Sorghum halepense	Johnson grass

Seeds infested with live insect pests in any stage of development, and diseased seeds.

All recognized cultivated varieties of the abovementioned species used for the purposes of cultivation are exempt from this list.

Restricted Weeds.—The Regulations provide that the presence of certain weed seeds shall be limited by count to a maximum number per lb. or oz.

In the case of barley, beans, cowpeas, maize, oats, peas, rye, tares, wheat, and seeds of similar or larger size, the number of weed seeds allowed in 1 lb. shall not exceed the number set out opposite to the weeds in question.

In the case of other seeds, the number of seeds allowed per oz. shall be not more than as set out opposite the name of such seed.

Those which occur most frequently in Queensland are—

Alternanthera repens (syn. *Alternanthera acryantha*, syn. *A. echinata*)	Khaki weed	20
Argemone mexicana	Mexican poppy	10
Brassica spp.	All weed species	20
Cirsium lanceolatum (syn. *Carduus lanceolatus*, syn. *Cnicus lanceolatus*)	Spear thistle	10
Echium spp.	Bugloss	20
Lithospermum arvense	Corn gromwell or Ironweed	20
Marrubium vulgare	Horehound	10
Polygonum spp.	Wireweed	20
Sisymbrium spp.	Mustard weed, Wild mustard	20

A full list of the weed seeds controlled by count is set out in the Regulations.

The following table sets out the main seeds that are sold in Queensland with their standards of purity and germination:—

Kind of Seed.	Inert Matter plus Weed Seeds.	Weed Seeds.	Other Crop Seeds.			Germination.
	By Weight Max. %	By Weight Max. %	By Weight Maximum %			By Count Min. %
Barley other than Malting	1·25	0·25	0·5	Other Barley, Oats, Rye and Wheat	5·0	80
Barley, Malting	1·25	0·25	0·5	Other Barleys	Nil	80
Beans—						
Broad	1·25	0·25	0·1	..	..	70
French	1·25	0·25	0·1	..	..	75
Lima	1·25	0·25	0·1	..	..	75
Mauritius	1·25	0·25	0·1	..	..	70
Navy	1·25	0·25	0·1	..	..	75
Rice	1·25	0·25	0·1	..	..	75
Soy	1·25	0·25	0·1	..	..	60
Beet	3·0	0·25	0·2	..	..	55 of Clusters
Cabbage	0·75	0·25	0·1	..	..	65
Cabbage, Chinese	0·75	0·25	0·1	..	..	65
Capsicum	0·75	0·25	0·1	..	..	50
Cauliflower	0·75	0·25	0·1	..	..	65
Carrot	4·75	0·25	0·5	..	..	50
Celery	1·75	0·25	0·5	..	..	50
Cotton	2·25	0·25	0·2	..	..	70
Cowpeas—						
Black	5·25	0·25	0·2	Maize Teosinte	Nil Nil	70
Giant, Clay or Crowder	5·25	0·25	0·2	Maize Teosinte	Nil Nil	70
Other Kinds	1·25	0·25	0·2	Maize Teosinte	Nil Nil	70
Cress, Garden	0·75	0·25	0·1	..	..	60
Crotalaria spp. (Cultivated)	2·0	0·25	0·2	..	..	70
Cucumber	1·25	0·25	0·2	..	..	75
Grasses—						
Blue Panic-Giant Panic	20·0	0·25	0·5	..	..	50
Canary Seed	1·25	0·25	0·5	..	..	65
Carpet Grass	2·0	0·5	1·0	..	..	60
Cocksfoot	25·0	0·25	3·0	Yorkshire fog	1·0	60
Couch	2·0	0·5	1·0	..	..	60
Green Panic	3·0	0·25	0·5	..	..	3
Guinea Grass	3·0	0·25	0·5	..	..	3
Mitchell Grass	20·5	0·5	5·0	..	..	35
Molasses Grass	1·75	0·25	0·1	..	..	30
Paragrass	3·0	0·25	0·5	..	..	3
Paspalum	45·25	0·25	0·5	Rhodes Grass	3·0	60
Phalaris tuberosa	2·5	1·0	2·0	..	..	60
Prairie Grass	5·5	0·5	0·2	..	..	65
Rhodes Grass	9·0	1·0	0·5	Paspalum dilatatum	3·0	30
Rye Grass—						
Italian	4·0	1·0	2·0	..	..	65
Perennial	4·0	1·0	2·0	..	..	60
Wimmera	4·0	1·0	2·0	..	..	65
Urochloa or Liverseed Grass	5·0	0·5	0·2	..	..	30
Kohl Rabi	0·75	0·25	0·1	..	..	65
Leek	0·75	0·25	0·1	..	..	50
Lettuce	2·5	0·25	0·5	..	..	70
Lucerne	1·5	0·5	0·5	..	..	80
Lupins	1·25	0·25	0·2	..	..	60
Maize	1·25	0·25	0·2	..	..	80
Mangel	3·0	0·25	0·2	..	..	55 of Clusters
Marrow	1·25	0·25	0·1	..	..	70

Kind of Seed.	Inert Matter plus Weed Seeds.	Weed Seeds.	Other Crop Seeds.			Germination.
	By Weight Max. %	By Weight Max. %	By Weight Maximum %			By Count Min. %
Melons—						
Citron	1·25	0·25	0·1	..	..	65
Rock	1·25	0·25	0·1	..	..	70
Water	1·25	0·25	0·1	..	..	65
Other Varieties	1·25	0·25	0·1	..	..	65
Millets—						
Broom	2·25	0·25	0·5	..	..	70
Foxtail	2·25	0·25	0·5	..	..	75
French	2·25	0·25	0·5	..	..	75
Hungarian	2·25	0·25	0·5	..	..	75
Japanese	2·25	0·25	0·5	..	..	75
Manchurian	2·25	0·25	0·5	..	..	75
Pearl	2·25	0·25	0·5	..	..	75
Setaria Giant	2·25	0·25	0·5	..	..	75
Setaria Dwarf	2·25	0·25	0·5	..	..	75
White Panicum	2·25	0·25	0·5	..	..	75
Other Varieties	2·25	0·25	0·5	..	..	75
Mustard	0·75	0·25	0·1	..	..	65
Oats	2·5	0·5	0·5	Barley, Rye, Wheat	5·0	80
Onion	0·75	0·25	0·1	..	..	50
Parsley	1·75	0·25	0·5	..	..	40
Parsnip	2·5	0·25	0·5	..	..	40
Passion Fruit	1·75	0·25	0·2	..	..	30
Papaw	1·75	0·25	0·2	..	..	30
Peanuts—shelled	5·25	0·25	0·2	..	..	80
Peas (Garden and Field)	1·25	0·25	0·2	..	..	75
Pop Corn	1·25	0·25	0·1	..	..	70
Pumpkin	1·25	0·25	0·1	..	..	70
Radish	0·75	0·25	0·1	..	..	75
Rape	0·75	0·25	0·1	..	..	65
Red Clover or Cowgrass	1·5	0·5	2·0	..	..	70
Rhubarb	0·75	0·25	0·1	..	..	50
Rosella	1·25	0·25	0·2	..	..	50
Rye Corn	1·25	0·25	0·5	Barley, Oats and Wheat	5·0	75
Sage	0·75	0·25	0·1	..	..	40
Sorghum—						
Broom Millet	2·25	0·25	0·5	..	..	70
Grain	6·25	0·25	0·5	..	..	70
Saccharine	2·25	0·25	0·5	..	..	70
Subterranean Clover	2·25	0·25	0·5	..	..	70
Sudan Grass	6·25	0·25	0·5	Other Sorghum spp.	Nil	65
Squash	1·25	0·25	0·1	..	..	70
Sunflower	4·25	0·25	0·1	..	..	65
Sweet Corn	1·25	0·25	0·1	..	..	65
Swede Turnip	0·75	0·25	0·1	..	..	65
Tares (Vetches)	1·25	0·25	0·2	..	..	60
Tomato	2·25	0·25	0·1	..	..	70
Townsville Lucerne	3·0	0·5	0·5	..	..	40
Turnip (Table)	0·75	0·25	0·1	..	..	65
Vetch or Tares	1·25	0·25	0·2	..	..	60
Wheat	1·25	0·25	0·5	Barley, Oats and Rye	5·0	80
White Clover	1·5	0·5	5·0	..	..	70
Crop Seeds not elsewhere included—						
Agricultural	3·0	0·25	0·2	..	..	60
Vegetable	0·75	0·25	0·1	..	..	60

Seed Certificate.—The seed certificate sets out the result of the analysis of a sample of seed submitted for examination. This consists of separating the sample into its various parts, i.e., analytical purity—seeds of the kind to which it purports to belong—other crop seeds, prohibited seeds, weed seeds, and inert matter. These parts are weighed and the weights recorded in terms of percentages of the whole.

The other crop seeds, prohibited seeds, weed seeds, and the type of inert matter are named and recorded.

Inert matter includes—

(*a*) Stones, chaff, sand, grit, soil;

(*b*) All portions of seeds or fruits that are one-half or less than one-half the normal size;

(*c*) Fragments of roots, stems, leaves and flowers, empty glumes, single palae, sterile flowers of grasses;

(*d*) Completely decorticated seeds of legumes;

(*e*) Clusters of mangel, beet, and sugar-beet containing no seeds and clusters which pass through a 2-mm.-slit sieve;

(*f*) Part of insects, dead insects, scales, and any other inert matter;

(*g*) *Claviceps sclerotia* (*Claviceps microcephala* and other species) in grass seed samples;

(*h*) Provided that, with respect to the following grasses, inert matter shall not include empty glumes or sterile flowers:—*Chloris* spp., *Melinis* spp., *Panicum maximum, Panicum maximum* var. *trichoglume*, *Brachiaria purpurascens* (syn. *Panicum muticum*).

The germination is ascertained by placing a number of seeds (usually 300) on moistened flannelette in a tray which is then placed in a germinator in which the temperature and moisture are controlled to the optimum for the respective kinds of seeds. After the seeds have germinated they are removed and the germination recorded, also the number of days in which it took for such germination.

Often a sample of good seed will germinate in 2 days, while a like kind will in another sample take up to 10 days. Obviously, the quicker germinating sample is to be preferred.

From the certificate can be ascertained the true value of a sample, i.e., the actual amount of seed which will grow (pure germinating seed) and its value can be compared with other lots of the same kind of seed.

For instance, two lots of lucerne seed are offered at, say, 1s. 6d. and 1s. 4d. per lb.—which is £7 10s. and £6 13s. 4d., respectively, per 100 lb. lot with the following analyses:—

	Sample. 1s. 6d. per lb. %	Sample. 1s. 4d. per lb. %
Analytical purity	98.9	98.6
Inert matter	0.7	1.0
Weed seeds	0.2	0.2
Other crop seeds	0.2	0.2
	100.0	100.0
Germination	96%	75%

It will be noted that there is very little difference in the purities but a large difference in the germination, which is quite common.

The amount of seed that will grow in any sample can be obtained in the following manner:—

$$\frac{\text{Analytical purity \%} \times \text{Germination \%}}{100} = \text{\% Pure germinating seed.}$$

Applied to the "1s. 6d. per lb." sample this gives—

$$\frac{98{\cdot}9 \times 96}{100} = 95\% \text{ or } 95 \text{ lb. out of every } 100 \text{ lb. of seed.}$$

and in the "1s. 4d. per lb." sample—

$$\frac{98{\cdot}6 \times 75}{100} = 74\% \text{ or } 74 \text{ lb. out of every } 100 \text{ lb. of seed.}$$

The actual cost per lb. of pure germinating seed is ascertained as follows:—

$$\frac{\text{Cost per 100 lb.}}{\text{Pure germinating seed}} = \text{Cost per lb. of pure germinating seed, i.e., seeds that will grow.}$$

Thus the first sample costs—

$$\frac{£7\ 10\ 0}{95} = 1/7 \text{ per lb.}$$

and the latter costs—

$$\frac{£6\ 13\ 4}{74} = 1/10 \text{ per lb.}$$

Thus the "cheaper" line is actually 3d. per lb. dearer than the "dearer" line—when the actual amount of seed that will grow is taken as the basis of calculation—and, after all, the seeds that will produce plants are what the farmer should be interested in.

Taking 1 lb. of average lucerne seed as containing 210,000 seeds, each lb. of seed as purchased should in the case of the 1s. 6d. per lb. seed produce 199,500 plants, and the 1s. 4d. per lb. seed 155,400 plants.

If these two samples were sown at the rate of 12 lb. per acre of pure germinating seed—the actual seed that will grow—100 lb. of the "1s. 6d." seed would plant approximately eight acres, and 100 lb. of the "1s. 4d." seed would plant approximately six acres.

Hard Seeds.—Hard seeds are those of which seed coats are so impervious to water as to delay germination, but because such seed would germinate to some degree when placed in the soil, some consideration is given to including them in the germination count.

In the case of lucerne, cowpeas, rice beans, and crotalarias, all the hard seeds are included in the germination. Half the hard seeds in red clover and one-third in the case of other legumes are included in the germination count.

Because of the very large proportion of hard seeds, and difficulties associated with germination tests brought about by the presence of moulds, the seeds of Mauritius and Velvet beans are abrased before the test is made.

Sampling of Seeds.—Great care is necessary when obtaining a sample for analysis, the objective being to draw from the bulk a sample truly representative of such bulk, *irrespective of any difficulties which may be encountered,* and then to mark the sample in a way which definitely connects with the bulk.

It should always be ascertained whether the whole consignment has a common origin. A separate sample should be taken for each of the following:—

(*a*) Seeds of different kinds;

(*b*) Seeds of the same kind from different origins;

(*c*) Seeds of the same kind bearing different brands or marks on the containers.

It is most important that each portion taken from a bag should be examined to see if it corresponds with the other portions which together are to comprise a sample. For instance, if, when taking a sample of seed there is an observed difference in the colour, size, or appearance of the seed, or the presence of insects or material other than seed, then each difference should be represented by a separate sample; this would necessitate the examination of every bag in the consignment, and a classification of all bags into groups of similar types—one sample representing each different type.

Seeds unlike sugar, flour, and other such commodities are not standard products of a factory. Seeds are liable to vary from bag to bag. Even a consignment from one farm may sometimes vary, moreover, no two fields necessarily produce seed of equal quality. Therefore, if only one sample is sent as representing a mixture of two or more lots of seed, good seed may be condemned or poor quality seed may be passed. Sampling must include intelligent examination and, if necessary, grouping of the portions which are drawn to comprise the sample or samples.

In cases where variations in a consignment are noticed—such as warrant extra samples—then the particular bags from which the various samples are drawn should be marked, either singly or in groups, with identification marks such as A, B, C, D, &c., to correspond with the various samples which should be similarly distinguished.

The weights of samples specified in this article are a minimum; larger quantities may be obtained. The practice of extracting the overweight from a sample found to be slightly in excess of the minimum required, cannot be too strongly condemned.

When drawing a sample from a large number of bags, it is usually necessary to obtain far more than the minimum weight prescribed—in which case the sample should be thoroughly mixed and a suitable portion extracted as the final sample. This breaking down of large samples is dealt with later.

Because of the unsatisfactory position in respect of samples, all certificates and reports relating to samples submitted for examination are marked as follows:—

> The figures set out hereon relate only to the analysis of the sample as received and are not a guarantee by the Department of Agriculture and Stock as to the bulk.

Certificates relating to samples drawn by inspectors of the Standards Branch do not bear this statement.

Common errors involved in sampling include the following:—

(*a*) Samples have been drawn from far too small a number of bags.

(*b*) Some samples have obviously contained seeds drawn from two or more bulks of different origin.

(*c*) The marking of the sample has been insufficient to enable correct identification of the bulk at a later period.

Drawing Samples.—The usual method of drawing a sample is by means of a trier—a brass or steel tube with a sharpened end—which should be inserted to its full length into each bag and a small quantity of seed drawn off.

When sampling seed which does not run—such as Rhodes, Paspalum and Prairie—a trier is useless; therefore, each closed bag should be cut, an "L" shaped incision about 2½ inches by 2½ inches being required. The hand should be inserted through the hole and a portion obtained for the sample.

To ensure that a truly representative sample is obtained, approximately equal parts should be drawn alternatively from the top, middle, and bottom of the bag. In normal practice, the proportion of bags to be sampled is as follows:—

1 to 19-bag lots	A portion from each bag.
20 to 39-bag lots	A portion from each of not less than 20 bags.
40 to 59-bag lots	A portion from each of not less than 28 bags.
60 to 79-bag lots	A portion from each of not less than 32 bags.
80 to 99-bag lots	A portion from each of not less than 36 bags.
100 to 199-bag lots	A portion from each of not less than 40 bags.
200 bags and over	A portion from each of not less than 20 per cent. of the total number of bags.

Not less than a trier full of seed or a handful should be drawn from any one bag.

As indicated earlier, if it is observed when drawing samples that great variation occurs in the bulk, two or more samples should be obtained, each from bags of which contents are similar, and representing the variations which may have been noticed. These different lots should be marked with distinguishing marks, and the samples marked similarly.

Samples forwarded for examination should be of the following minimum weight:—

Kind of Seed.	Weight Required.
Barley	8 oz.
Beans	8 oz.
Beet	½ oz.
Cabbage	½ oz.
Canary	4 oz.
Carrot	½ oz.
Couch Grass	2 oz.
Cowpeas	8 oz.
French Millet	4 oz.
Grasses	2 oz.
Japanese Millet	4 oz.
Lucerne	4 oz.
Maize	8 oz.
Mauritius Beans	1 lb.
Millets	4 oz.
Molasses Grass	2 oz.
Oats	8 oz.
Onion	½ oz.
Panicum	4 oz.
Paspalum	2 oz.
Peanuts	1 lb.
Peas	8 oz.
Prairie Grass	2 oz.
Radish	½ oz.
Rhodes Grass	2 oz.
Rye Corn	8 oz.
Sorghum	4 oz.
Sudan Grass	4 oz.
Tares	8 oz.
Tomatoes	½ oz.
Turnip	½ oz.
Vegetable seeds in made-up packets	5 pkts.
Wheat	8 oz.
White Panicum	4 oz.

In the case of seeds not mentioned, the weight set out for the seed of nearest size should be forwarded.

In the case of seeds obviously containing weed seeds or other impurities, not less than double the weight mentioned should be sent.

Where seeds are stored loose in bulk, the samples should be taken from various parts of the heap or bin, and should be of the like proportion, as nearly as can be fairly estimated, as would be required if such seed were in bags, so that a representative sample of the whole bulk is obtained.

In the Seed Testing Station great pains are taken to ensure absolute accuracy of work. It therefore follows that all this care is wasted unless the person forwarding samples for examination takes some trouble to ensure that the samples drawn truly represent the bulks from which they are obtained.

After a sample has been drawn as indicated, it should be emptied out on to a large piece of paper, thoroughly mixed; then a quantity not less than the prescribed weight for the particular kind of seed should be drawn for purposes of forwarding to the Seed Testing Station. A duplicate sample should be kept for reference.

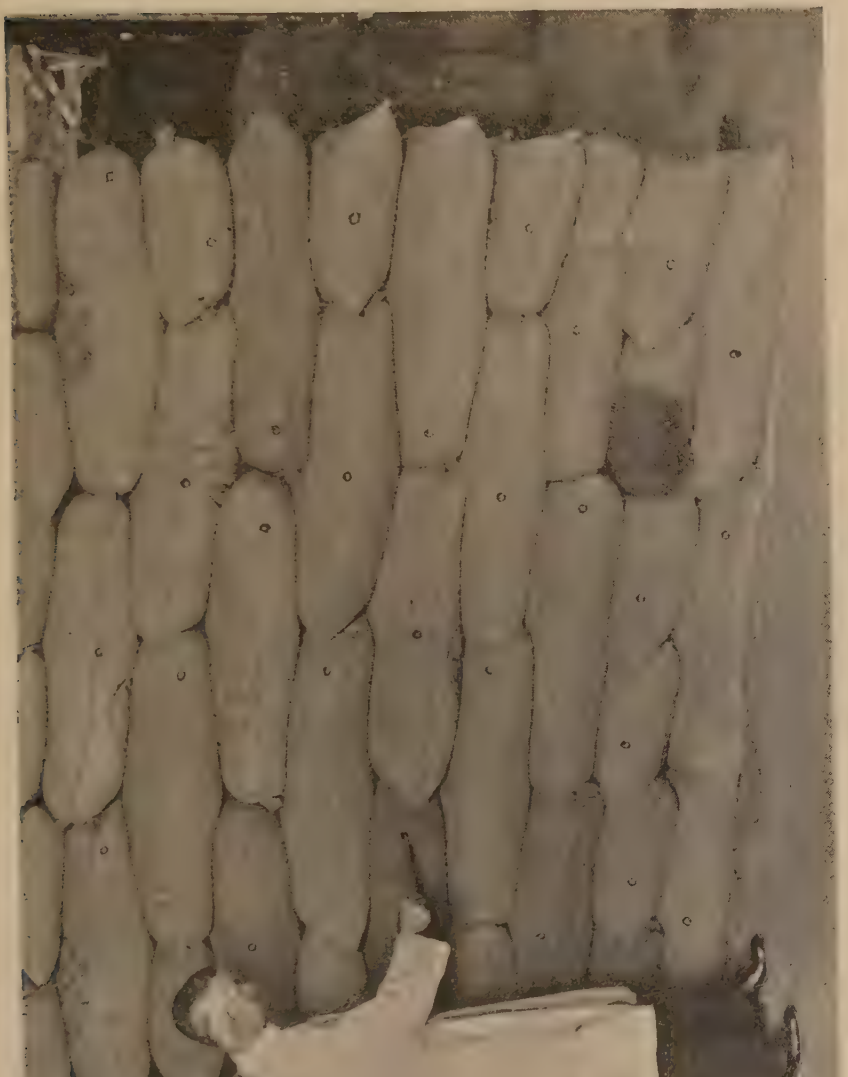


Plate 105.

DRAWING OFFICIAL SAMPLES.—Note the trier marks in the top, middle, or bottom of the bags. The trier holes have been outlined with marking ink for purposes of demonstration; actually the holes left when rubbed with the point of the trier almost seal themselves up, and are practically unnoticeable.

Breaking Down Large Samples.—To reduce large samples of seed, the following procedure should be closely adhered to:—

1. After drawing a representative sample from the required proportion of the bags or bulk, place the seed on to a large level sheet of paper, preferably on a table or bench.

2. **Mix the seed thoroughly together by means of a spatula, plasterer's knife or large knife blade, taking care the blade is inserted into the heap close to the paper, thereby lifting any small seeds, &c.,** before turning the blade over to form another heap. This should be done until all the seed has been turned over at least three times. Avoid mixing with the fingers, as this allows small seeds and fine material to collect at the bottom of the heap. **This fine material must be lifted up on the blade and mixed through the sample.**

Now proceed to divide the sample by levelling it out and dividing it into four approximately equal parts, simply by drawing the spatula or knife through the heap from top to bottom and left to right.

Now take the top right-hand portion and the bottom left-hand portion, place them together on a sheet of paper, and keep as the sample. The other two portions should be mixed together and retained as a check sample.

It is obvious that if a portion is rejected this procedure will reduce the size of the sample drawn. After mixing again, the dividing procedure can be repeated to further reduce the size, and so on, if necessary. Too big a reduction of size is not recommended.

A sample, after mixing and dividing, would appear somewhat as follows:—

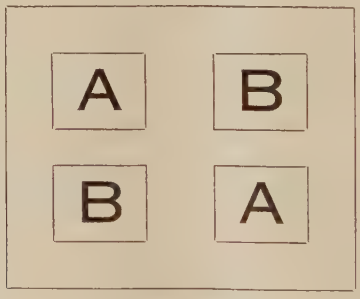


Plate 106.

Portions A, mix and keep as check samples.

Portions B, mix and forward for analysis.

Where samples are taken by inspectors, the Act requires the final sample to be in three separate packets, and a more complicated method of mixing and breaking down is used.

In the accompanying illustration of an inspector drawing an official sealed sample (Plate 105), it will be observed that the stack is

numbered (faintly) 18370. The marking of the packets—official sealed samples are divided into three parts, one for the vendor, one for analysis, and the third is retained by the inspector—would be as follows:—

"Sample of Oats drawn from 50 bags representing a total of 120 bags marked 18370.

Ex. S., Farmer of Oatville.
Vendor, A. Seedseller, Summertown.
7th February, 1947."

Sealing is carried out by means of lead seals and sealing pliers which emboss certain marks on the seals.

Marking of Samples.—All samples should be plainly written on in ink, setting out the undermentioned particulars:—

Sample of seed drawn from bags representing a total of bags.

Bags marked:—

Purchased from of on

Name of sender:

Address:

Date:

Examination of samples without name and address of sender cannot be undertaken.

Samples should be addressed as follows:—

Seed Sample for Examination,
Seed Testing Station,
Department of Agriculture and Stock,
BRISBANE.

Special care should be taken to securely fasten the sample. The examination of samples which have been opened in transit is useless for any determination.

Fee and Covering Letter.—A covering letter, enclosing the prescribed fee, should be addressed to the Under Secretary, Department of Agriculture and Stock, Brisbane.

The fee for a copy of the result of any examination of any seeds shall be as follows:—

1. 2s. 6d. per certificate, or
2. (*a*) £3 10s. for the first fifty certificates, and thereafter 1s. per additional certificate during the twelve months ending 30th June—providing the sum of £3 10s. shall be paid in advance;

   (*b*) In the event of any person claiming a refund of fees paid under 2 (*a*) on account of the number of certificates being less than fifty, such refund shall consist of the amount left after the charge of 2s. 6d. per certificate has been made.

Free Examination.—Samples representing seeds purchased by farmers for their own sowing are examined free of charge, providing that the full particulars as above are marked on the sample, and a covering letter stating the purpose for which the seed is to be used is sent.

Complaints.—In the case of any complaints regarding analytical purity or germination, the buyer should at once send a sample of the seed, marked with the particulars as set out, together with a covering letter to the Department advising of the despatch of the sample: this will be examined free of charge.

Examine Goods on the Day of Delivery.—Both buyers and sellers are urged to examine all goods on the day of delivery, and when in doubt regarding any seeds, fertilizers, pest destroyers, veterinary medicines or stock foods, to write immediately to the Department of Agriculture and Stock, Brisbane, in order that the matter may be immediately investigated.

Plate 107.

MOUNT GREVILLE FROM KINGPAH, NEAR MOOGRA, WEST MORETON, QUEENSLAND.

Empire Preference on Rural Products—What it has meant to Queensland.

By OFFICERS OF THE DIVISION OF MARKETING.

SUMMARY.

THE United Kingdom has always been by far the largest and best overseas market for Queensland rural products, and sales of such products in this market in 1938-39 accounted for no less than 13 per cent. of this State's gross income, excluding the value of the services incidental to producing and shipping them. It is obvious, therefore, that the prosperity of the State as a whole is likely to be adversely affected by downward revision or abolition of Empire preferences at present applicable to such products, unless the State obtains a compensating gain in a general world trade rearrangement.

In the year immediately preceding the disruption of normal trade by the war (1938-39), the value of Empire preferences to the major rural industries in Queensland amounted to approximately £A4,000,000, made up as follows:—

Sugar.

In 1938-39 Great Britain absorbed 88 per cent. of Australia's sugar exports and Canada 11 per cent. The value of the preference accorded to Australian sugar on the United Kingdom and Canadian markets in that year was £A1,830,152 and £A293,300 respectively. Queensland production amounts on the average to about 95 per cent. of the total Australian production so that Australia's exports of sugar may be reckoned as coming entirely from Queensland.

Butter.

In 1938-39, before the effects of war became operative, exports of Queensland butter amounted to 81 per cent. of the total factory production, and the monetary value of the Empire preference accorded these exports was approximately £A1,040,000.

Cheese.

Queensland cheese exports to Great Britain for the year 1938-39 were valued at £A232,862, on which the tariff preference amounted to approximately £A35,000.

Eggs.

In 1938-39, the monetary value of Empire preference to the Queensland poultry industry was approximately £A10,500. During the war years, however, egg production increased to such an extent that the surplus now available for export, including processed eggs, is more than twice what it was in 1938-39, and the monetary value of the preference has increased proportionately.

Meat.

Beef and beef products accounted for 90 per cent. of Queensland's exports of meat to the United Kingdom prior to the war. In the year 1938-39 tariff preference on beef represented a value of £A740,721.

Canned Fruit.

Relative to supplies from foreign sources, the monetary value of the preference accorded Queensland canned fruit imported into Great Britain and Canada in 1938-39 is estimated at £A7,000 and £A4,800 respectively, or approximately one-sixth of the f.o.b. value of the exports in that year.

GENERAL OUTLINE.

Rural production has always occupied a position of major importance in the economy of Queensland, and, immediately prior to the war, it represented more than a quarter of the annual gross value of goods and services in this State. Moreover the value of the rural products exported at this time amounted to more than half the gross value of the total produced.

The United Kingdom has always been by far the best overseas market for Queensland rural products; in 1938-39, the last financial year before the war, the gross value of all rural products shipped to this market was £19,554,778, or 74.5 per cent. of the total value of overseas exports of rural products in that year. In other words, exports of rural products to Great Britain accounted for 13 per cent. of Queensland's gross income in 1938-39, apart from the value of the services incidental to producing and shipping them.

These and other relevant facts, which are set out in Table 1, illustrate the extent to which the prosperity of the State as a whole may be influenced by the revision or abolition of Empire Preference on rural products.

TABLE 1.

TABLE SHOWING RELATIONSHIP OF GROSS VALUE OF EXPORTS OF RURAL PRODUCTS FROM QUEENSLAND TO THE UNITED KINGDOM (COLUMN "D") TO GROSS VALUE OF (*a*) ALL GOODS AND SERVICES, (*b*) TOTAL RURAL PRODUCTION, AND (*c*) TOTAL OVERSEAS RURAL EXPORTS.

Year.	(*a*) Gross value of Goods and Services.	(*b*) Gross value of Rural Production.	(*c*) Gross value of Rural Production Exported.	(*d*) Gross value of Rural Production Exported to the United Kingdom.
	£A.	£A.	£A.	£A.
1934–35	116,200,000	32,395,240	16,965,186	10,925,000
1935–36	123,000,000	33,452,420	17,246,326	10,621,295
1936–37	132,100,000	36,665,661	20,292,171	12,313,075
1937–38	143,500,000	42,766,346	23,520,687	16,204,171
1938–39	150,400,000	45,217,176	26,264,668	19,554,778

Almost the whole of the rural products exported to the United Kingdom from Queensland comes under the following five categories: dairy products, wool, meat products, sugar and fruit. In 1938-39, the value of the products included in these five categories accounted for almost 99 per cent. of the total rural exports to this market.

Table 2 shows the annual value of the exports from Queensland to the United Kingdom of each of the above classes of products during the period 1932-33 to 1939-40.

Reference to the Table will show that the value of the rural products exported annually from Queensland to the United Kingdom increased substantially in six of the seven years immediately preceding

the war. The exception was 1935-36, when there was a decline of 3 per cent. from the total of the previous year, due to a drop in the value of wool, meat and fruit shipments. Throughout the period under review the most striking increase was made with respect to dairy products which, in 1938-39, were easily first in importance and accounted for almost 40 per cent. of the value of the rural products exported to the United Kingdom in that year.

TABLE 2.

Year ended June 30th.	Dairy Produce. (a)	Meat Products.	Wool.	Sugar.	Fruit.	Total.
	£A.	£A.	£A.	£A.	£A.	£A.
1932–33 ..	2,983,887	1,683,040	1,738,229	1,111,458	44,553	7,487,719
1933–34 ..	3,341,085	2,027,379	2,925,667	2,093,878	58,414	10,446,423
1934–35 ..	3,780,631	2,673,726	2,587,045	1,837,495	29,747	10,907,892
1935–36 ..	3,822,773	2,431,018	2,189,699	2,131,894	28,752	10,604,749
1936–37 ..	3,146,276	3,179,192	3,510,049	2,421,705	23,387	12,281,917
1937–38 ..	4,604,765	4,433,383	3,780,197	3,325,470	34,628	16,178,459
1938–39 ..	7,671,376	4,531,379	3,381,958	3,685,747	60,347	19,330,821
1939–40 ..	6,606,718	5,341,812	7,141,418	4,231,254	87,559	24,271,131

(a) Includes Butter, Cheese and Eggs.

While there were various causes contributing to the spectacular rise in the value of dairy and other rural products exported from Queensland to the United Kingdom in the years before the war, it would appear that the Ottawa Agreements Act which came into operation late in 1932 was a determining factor in this connection. Until other arrangements are made, this Act provides, with respect to dairy produce, for the free and unrestricted entry into the United Kingdom of eggs, butter, cheese and other poultry and milk products from Australia, New Zealand, Newfoundland and Southern Rhodesia. Since imports of dairy products entering the United Kingdom from foreign countries are dutiable at prescribed rates, the effect of the Ottawa Agreement has been to give Australian dairy produce a measure of preference on the British market over imports from non-Empire countries.

Apart from the dairying industry, however, Empire Preference granted under the Ottawa and other Trade Agreements has also assisted materially in the development of the sugar, meat and fruit industries in Queensland. The effect of Empire Preference on overseas trade in the major products of these industries is reviewed in the following pages.

DAIRY PRODUCTS.

Butter.

For many years, the United Kingdom market has absorbed practically the entire exportable surplus of dairy products from Queensland.

Table 3 shows the quantity and value of butter exported from Queensland to Great Britain in each of the years 1932-33 to 1939-40 inclusive, as well as total factory production for each of those years:

It will be noted from the Table that exports of butter to Great Britain reached a record height in 1938-39. Exports in that year were equal to more than 80 per cent. of the State's output of butter from factories. When it is taken into account that the value of Factory

butter produced in Queensland was in that year more than 85 per cent. of the value of the State's total output of dairy products (excluding eggs) the paramount importance of the United Kingdom market is evident. Without this outlet for such a large proportion of our butter production the structure of the dairying industry would be undermined.

TABLE 3.

Year ended 30th June.	Total Factory Production.	Exports to Great Britain.		
		Quantity.	Percentage of Total Exports.	Value.
	Lbs.	Lbs.	Per cent.	£A.
1932–33	93,312,321	73,705,408	96·29	2,756,839
1933–34	110,607,700	94,293,584	96·14	3,123,662
1934–35	133,402,841	97,763,125	95·72	3,511,752
1935–36	115,703,863	72,836,000	95·55	3,643,178
1936–37	84,401,372	52,048,584	96·59	2,988,492
1937–38	114,941,221	72,561,661	96·67	4,379,228
1938–39	154,377,535	124,571,124	97·67	7,343,482
1939–40	139,795,042	102,720,552	96·23	6,269,801

Whilst the total quantities of Queensland butter disposed of in overseas markets other than Great Britain increased by only 136,463 lbs. from 1932-33 to 1938-39, it is significant that the quantity of Queensland butter which the United Kingdom market was able to absorb in 1938-39 was almost 51,000,000 lbs. in excess of what it was in 1932-33.

The removal of the preferential tariff on butter, which is at present enjoyed by Empire countries, could be expected to result in a substantial reduction in returns to Queensland producers. In the peak period year of 1938-39, for example, the removal of the preference would have resulted in a reduction of more than £A1,000,000 in the total value of butter exported from Queensland to Great Britain in that year, equivalent to 18s. 9d. per cwt.

War conditions brought about a marked change in the disposal of dairy products. After the entry of Japan into the war, Australia undertook the responsibility of providing food for Allied troops in the South West Pacific area. Under this arrangement, Australia supplied butter to American troops based in the South West Pacific, and in return America exported butter to Great Britain. For this reason, exports of butter from Queensland to Great Britain fell to approximately 37,500,000 lbs. in 1941-42; 44,900,000 lbs. in 1942-43; 39,600,000 lbs. in 1943-44; 31,600,000 lbs. in 1944-45 and 60,800,000 lbs. in 1945-46.

An Agreement is in existence at the present time whereby the Government of the United Kingdom has contracted with the Commonwealth Government for the purchase of Australia's exportable surplus of butter. This contract provides Australia with an assured market at fixed prices for the whole of her exportable surplus of butter until 30th June, 1948, but the position beyond that date is not clear. There is considerable scope in Queensland for the further development of the dairying industry, but the retention of British preference after the expiration of the present contract would appear to be essential if some measure of price stability is to be provided for the products of the industry.

War conditions were responsible in a large measure for the falling off in butter production during the years 1941-42 to 1944-45. The highest production reached in those years was in 1942-43 when approximately 111,500,000 lbs. of butter were produced in factories, as compared with more than 154,000,000 lbs. in the immediate prewar year 1938-39. With the termination of the war, it is reasonable to assume that production in the industry, given good seasons, will quickly build up to the 1938-39 level. However, it would appear from past experience that the extent to which expansion can take place beyond that level will depend, in no small measure, on the continuance of the preferential tariff at present in operation.

Cheese.

Table 4 shows the quantity and value of cheese exported from Queensland to Great Britain in each of the years 1932-33 to 1939-40 inclusive, as well as total factory production for each of those years:

TABLE 4.

Year ended 30th June.	Total Factory Production.	Exports to Great Britain.		
		Quantity.	Percentage of Total Exports.	Value.
	Lbs.	Lbs.	Per cent.	£A.
1932–33	11,153,825	6,362,529	97·48	145,431
1933–34	13,937,788	6,465,979	97·44	140,203
1934–35	13,525,380	7,636,713	97·67	156,574
1935–36	10,018,618	3,288,430	94·48	75,622
1936–37	7,771,926	1,473,617	83·39	38,101
1937–38	11,942,225	5,586,168	96·63	149,540
1938–39	15,749,103	9,240,578	97·39	232,862
1939–40	13,841,405	8,473,266	96·02	241,133

Whilst cheese production in Queensland is not of the same relative importance as butter, developments which took place during the war years have underlined the importance of preference on the United Kingdom market for this commodity, since cheese from Empire countries is admitted into Great Britain duty free as against a duty on imports from foreign countries of 15 per cent. ad valorem.

Despite manpower and material shortages during the war, cheese production in Queensland rose to record levels, due to the fact that, because of the lack of refrigerated shipping space and a shortage of protein foodstuffs, Great Britain requested greater supplies of cheese in lieu of butter. As a result of an intensive campaign, supplies of milk were diverted from butter to cheese production and new factories were erected to manufacture the milk into cheese.

As in the case of butter, the United Kingdom Government has contracted with the Commonwealth Government to purchase the whole of Australia's exportable surplus of cheese. This contract virtually guarantees a market for Australia's exportable surplus of cheese at prices determined in advance, until 30th June, 1948. If, after that date, exports to Great Britain are to be sold on the open market, it is considered that further expansion of the cheese industry or the maintenance of the increased production achieved during the war years, will depend in no small measure on the retention of British preference.

Eggs.

Queensland eggs were first shipped to the United Kingdom in quantity in 1928-29. Prior to this time, overseas exports of this commodity were limited to small shipments to Papua and neighbouring islands. Ever since the trade with Great Britain was established, however, this market has absorbed almost the entire exportable surplus from Queensland and it is likely to continue as the chief overseas outlet for both eggs-in-shell and egg products. Table 5 shows the quantity and value of eggs exported from Queensland to Great Britain in each year from 1929-30 to 1939-40 inclusive.

TABLE 5.

EXPORT OF EGGS TO UNITED KINGDOM.

Year ended 30th June.	Quantity.	Value.	Year ended 30th June.	Quantity.	Value.
	Dozens.	£A.		Dozens.	£A.
1929–30 ..	919,440	65,215	1935–36 ..	2,155,230	103,973
1930–31 ..	831,150	40,779	1936–37 ..	1,900,019	119,683
1931–32 ..	768,390	39,379	1937–38 ..	1,249,500	75,997
1932–33 ..	1,308,090	81,617	1938–39 ..	1,400,040	95,032
1933–34 ..	1,398,510	77,220	1939–40 ..	1,580,510	95,784
1934–35 ..	1,944,810	111,555			

Prior to the war, most of the commercial egg production in Queensland took place in the south-eastern portion of the State where marketing of the product is under the control of the Egg Marketing Board. Subsequent to Japan's entry into the war, the Commonwealth Government gave strong encouragement to the expansion of the egg industry throughout Australia in order to meet the requirements of the Australian and Allied Armed Forces. As a result of this production drive, the Egg Marketing Board was required to handle more than twice as many eggs in 1945-46 as it did in pre-war years. Table 6 shows the increase in production which has taken place in the Egg Marketing Board's territory during the war:

TABLE 6.

DELIVERIES OF EGGS TO THE EGG MARKETING BOARD AND ITS AGENTS.

Year ended 30th June.	Quantity in Dozens.	Year ended 30th June.	Quantity in Dozens.
1938–39	4,754,091	1942–43	7,223,676
1938–40	5,355,875	1943–44	6,419,554
1940–41	6,215,747	1944–45	8,862,842
1941–42	7,044,029	1945–46	11,094,812

While there has also been a substantial increase in commercial egg production in other parts of the State during the war years, particularly in the Central and Northern coastal districts, approximately 75 per cent. of the eggs which will be marketed in Queensland this year will be produced within the Egg Marketing Board's territory. In this area alone, the exportable surplus during the latter half of 1946 (eggs-in-shell and egg pulp) represented approximately 50 per cent. of the eggs

handled by the Board in this period and amounted to 3,203,250 dozen (106,775 cases) of an estimated value f.o.b. Brisbane of £266,938. This was more than twice as great as the surplus for the whole of 1938-39.

Since the end of the war, exports of both eggs-in-shell and egg products from Australia to Great Britain have been made under contract with the British Government. The present contracts continue until June, 1948. The allocation among States of export shipments to the United Kingdom is under the jurisdiction of the Commonwealth Egg Controller and it is expected that the contracts which have already been entered into will provide a market for every surplus egg of exportable quality which may be produced in Australia during the next twelve months. Consequently, the question of preference during this period does not arise. From June, 1948, onwards, however, the position is uncertain and the extent to which Queensland, in common with the other States, can maintain its present level of production beyond that time will depend in large measure on British Government policy with respect to tariffs and quota restrictions on both shell eggs and egg pulp. Under the Ottawa Agreement, egg products from Australia were granted free and unrestricted entry into the United Kingdom, along with those from certain other Empire countries including New Zealand, and Southern Rhodesia, "for the three years from 15th November, 1932, and subsequently until further arrangements are made," while imports of these products from foreign countries were dutiable at the following rates:

Eggs-in-shell:

Not exceeding 14 lb. per great hundred*	1/- per g.h.
Over 14 lb. but not exceeding 17 lb. per great hundred	1/6 per g.h.
Over 17 lb. per great hundred	1/9 per g.h.

* Great hundred—10 dozen.

Shell eggs exported from Australia to the United Kingdom are timed to arrive at British ports between September and January. At this time of the year domestic production is insufficient to meet the demand and Australian supplies compete mainly with refrigerated imports from New Zealand, South Africa and Canada among Empire countries, and with those from the Argentine, the United States, Morocco, Russia and Scandinavia among foreign countries. The preference accorded to the Empire product over that from foreign countries, under the above scale of duties, represents from 3s. to 5s. 3d. per case, depending on the size of the eggs. On the values prevailing in the 1937-38 season, this preference was equivalent to about 11 per cent., or 1.6d. per dozen, on eggs exported from Queensland to Great Britain.

As in the case of shell eggs, the United Kingdom is also by far the largest importer of egg pulp. Prior to the war, 97 per cent. of its supplies of this commodity were drawn from China and only a fraction of one per cent. from all Empire countries combined, none at all being supplied by Queensland. From September, 1946, to January, 1947, however, the Egg Marketing Board shipped 626,400 lb. of frozen egg pulp to Great Britain, as part of the quantity which Australia has contracted to supply the British Ministry of Food. During the currency of this contract, which, as in the case of that for shell eggs, expires at the end of June, 1948, the price to be paid for pulp will give a return approximately equivalent to that paid for shell eggs. Pulp exported under contract will have free entry into the United Kingdom, as was the case with all Empire-produced pulp before the war, in contrast to

pulp from foreign origin which was dutiable at the rate of one-halfpenny per lb. This low rate of duty, which is equivalent to less than one-halfpenny per dozen shell eggs, possibly accounts in large part for the overwhelming predominance of foreign imports of egg pulp into Great Britain over those from Empire countries in pre-war years. If Australia, subsequent to June, 1948, is to maintain exports of egg pulp to the United Kingdom in the volume which she has contracted to supply in the interim it will probably be necessary for the tariff on foreign imports to be raised to a level equivalent to that applicable to eggs-in-shell, that is, approximately 1.6d. per lb. In this connection, it should be noted that prices for egg pulp in the United Kingdom are not subject to the wide seasonal variations which occur in the case of shell eggs, so that imports take place the year round.

Having regard to the magnitude of the egg surplus which will be available for export annually from Australia if the level of production which was reached in 1945-46 is maintained—in the case of Queensland, approximately 50 per cent. of total marketable production—it is clear that any downward revision of the Empire Preference on eggs would, on the termination of the present contracts in June, 1948, seriously endanger the financial stability of the poultry industry throughout the Commonwealth. Even if production costs remain as at present, the increase in equalisation payments which would become necessary in the event of the abolition of the existing British tariff on eggs of foreign origin would reduce the producer's margin of profit on both domestic and export sales to a very low level, and might even wipe it out entirely. As the needs of the Empire and of the Allied nations generally have been responsible for the great increase which has taken place in egg production in Queensland during recent years, it is considered that the industry has a strong claim not merely for the retention of but also for an increase in Empire preference on eggs and egg products.

MEAT PRODUCTS.

International Meat Trade.

The international meat trade consists chiefly of exports from the Southern to the Northern hemisphere where the United Kingdom has been almost the sole market for beef, mutton and lamb. Germany, prior to 1930, imported some beef but subsequently ceased to do so.

The chief supply source is South America (Argentina, Brazil and Uruguay). While Australia is the largest Empire exporter it did not provide more than approximately fifteen per cent. of the imports of meat into the United Kingdom prior to the war.

In the past the United Kingdom market has been the governing factor so far as the development of the Queensland meat industry is concerned.

Mutton and lamb and pigmeats are not dutiable by the United Kingdom. Foreign tariffs on beef and veal are as follows:

Chilled Beef	¾d. per lb.
Frozen and Salted Beef and Veal	⅔d. per lb.
Boned and Boneless Beef and Veal and Edible Offals	20 per cent. ad valorem
Canned Beef	20 per cent. ad valorem

Australian meat entering the United Kingdom is not liable to tariff but is subject to various quota agreements from time to time as outlined below.

The Nature of the Queensland Trade.

Queensland meat exports to the United Kingdom represent seventeen per cent. of the total value of exports of rural production from Queensland. Approximately half of the total meat produced is exported to this market which absorbs over ninety per cent. of Australia's meat exports. In 1938-39, Queensland contributed fifty-two per cent. of such exports.

Of the meat exported to the United Kingdom from Queensland beef is the most important, as is indicated by Table 7 which shows the quantities of the various types of meat exported to Great Britian for the years 1936-37 and 1937-38:

TABLE 7.

Class of Meat.	1936-37.	Percentage of Total.	1937-38.	Percentage of Total.
	Tons.	Per cent.	Tons.	Per cent.
Chilled quarter beef	17,703	18·60	27,765	23·45
Frozen quarter and piece beef ..	56,216	59·05	59,783	50·49
Boneless beef	6,116	6·42	10,204	8·62
Boneless veal	1,892	1·99	2,799	2·36
Other beef and veal	346	0·36	415	0·35
Sundries	4,573	4·80	5,642	4·76
	86,846	91·22	106,608	90·03
Lamb	380	0·40	383	0·32
Mutton	2,141	2·25	2,481	2·10
Sundries	27	0·03	40	0·03
	2,548	2·68	2,904	2·45
Porkers	3,168	3·33	2,775	2·35
Baconers	1,062	1·12	3,801	3·21
Sundries	29	0·03	39	0·03
	4,259	4·48	6,615	5·59
Miscellaneous	1,542	1·62	2,285	1·93
	95,195	..	118,412	..
	45·58 Per cent. of Aust. Total.		49·53 Per cent. of Aust. Total.	

The Ottawa Agreements.

Since 1931-32, the year of the Ottawa Agreement, exportations of meat from Australia to the United Kingdom have been subject to various agreements between the two Governments.

The basis of agreement at Ottawa, as previously ratified by both Governments, in regard to meat was as follows:—

Britain agreed to:—

(1) Progressively restrict importations of foreign frozen beef carcases, boned beef, mutton and lamb until the middle of 1934 to thirty-five per cent. of the 1931-32 imports. After that period thirty-five per cent. restrictions to remain during period of Agreement.

(2) Limitation of foreign chilled beef imports to the volume of imports for year 1931-32 (viz. 440,000 tons) annually during period of Agreement.

Australia agreed to:—

(1) Limit exportation of frozen beef to U.K. during 1933 to an amount exceeding the exportation during 1931-32 by not more than ten per cent. After 1933 no limitation of exports.

(2) Limit exportation of mutton and lamb to U.K. during 1933 to that of the year 1931-32. After 1933 no limitation of exports.

The Commonwealth Government in carrying out the terms of the Ottawa Agreement limited the quantity of frozen mutton, lamb, beef and veal exportable to the United Kingdom during 1933. Queensland was allotted eight per cent. of the mutton and lamb and 82 per cent. of the beef and veal.

In 1934, the United Kingdom Government issued a white paper on "The Livestock Situation" which called attention to the decline in the livestock industry of that country and which announced that it was the firm intention of His Majesty's Government to safeguard the position of the United Kingdom livestock industry. Arrangements were subsequently made to provide for importations of Australian meat regulated in accordance with the absorptive capacity of the United Kingdom market. At the same time an agreement between the British Government and Argentina provided that a ten per cent. reduction of chilled beef would be imposed.

Exports of meat from Queensland to the United Kingdom from 1932-33 to the outbreak of war are shown in Table 8:—

TABLE 8.

MEAT EXPORTS TO THE UNITED KINGDOM FROM QUEENSLAND.

Year.	Beef.		Lamb and Mutton.	Pork.	Total.
	Frozen. (including Veal).	Chilled.			
	Tons.	Tons.	Tons.	Tons.	Tons.
1932–33 ..	(a)	(a)	4,251	1,368	50,951
1933–34 ..	(a)	(a)	2,191	2,142	62,986
1934–35 ..	63,662	8,277	5,022	3,895	80,856
1935–36 ..	50,329	9,774	1,490	5,154	66,747
1936–37 ..	61,935	17,568	2,533	4,262	86,298
1937–38 ..	74,277	25,390	2,864	6,507	109,038
1938–39 ..	67,626	25,813	1,763	7,923	103,125
1939–40 ..	84,178	5,548	3,294	13,844	106,864

(a) Not available.

The total exports of beef and veal, 1932-33, were 45,332 tons; and 1933-34, were 58,653 tons.

The Wartime Agreement.

As from 1st October, 1939, the British Ministry of Food became the sole purchaser of all meat exported from Australia to the United Kingdom. An Agreement to this effect was entered into by the two Governments. It is to be noted that immediately war was declared, all chilled beef exports ceased and meat of all classes had to be frozen prior to shipment.

The Agreement in existence at present extends from 1st October, 1944, to 30th September, 1948. Sales of meat for export are confined to sales under this contract. The prices as fixed at present apply up to 30th September, 1947, and will also apply subsequently unless either Government requests reconsideration on substantial grounds.

The Progress of the Meat Industry in Queensland.

Except for a rise in cattle numbers after the 1914-18 war the numbers of cattle in Queensland have not varied to any great extent since 1910. The sheep population in Queensland has also been relatively static. However, the export trade has expanded since 1931, particularly as regards pig meats and chilled beef.

The tables appended to the Meat Products section of this Report show the variations that have taken place in livestock numbers and in the quantity of meat of various kinds exported to the United Kingdom from Queensland, from which it will be seen that the two major developments that have taken place relate to the export of frozen pork or bacon carcases and to chilled beef.

The freezing of beef lowers its quality and places Queensland's meat exports at a disadvantage as against chilled beef marketed by Argentina. The latter country commenced exporting chilled beef in 1900, and since 1925 the bulk of their exports of meat to the United Kingdom has been in chilled form.

The advantages of higher prices that would be paid for chilled beef were of some importance subsequent to the last war as meat export prices were not very enouraging from the point of view of the expansion of the meat industry. By 1934, research by the Queensland Meat Industry Board and the C.S.I.R. had paved the way for the inauguration of chilled beef exports from Queensland. Rapid progress was made up till 1939, when this trade was discontinued owing to the war.

An export trade in boneless bobby veal was developed in the 1930's. This enabled dairy farmers to dispose of calves in increasing numbers and annual slaughterings increased from 70,000 in 1929-33 to 250,000 in 1940. The trade was suspended in 1941, but was later resumed.

Rapid expansion has occurred in the pig industry in this State and stock numbers have nearly quadrupled over the last thirty years. In the United Kingdom the fresh pork trade is supplied mostly by the home producer. On the other hand, the great bulk of bacon supplies is imported and since 1930 Queensland has developed a trade in the supply of frozen carcases for curing in Great Britain.

Mutton and lamb have not been of such importance in Queensland. On the bulk of the pastoral country conditions are more suited to wool

production. Some development of quality mutton and lamb production has, however, taken place in the Darling Downs. This has been mainly directed to the home market as up to the present costs have precluded any extensive participation in the export trade.

Further Development.

The extensive pastoral resources of Queensland together with the availability of large areas of undeveloped agricultural lands in a summer rainfall belt where forage crops can be grown will, under suitable conditions of markets and returns, permit a considerable expansion in the meat industries. The Royal Commission on Abattoirs and Meatworks (1945) states in its Report "that when the natural resources of the land reach full development from 9,000,000 to 10,000,000 beef cattle can be depastured within the State." This is double the present cattle population.

The settlement of the reclaimed prickly pear belt of Queensland comprising 20,000,000 acres of rich agricultural and pastoral country, would mean an expansion of the area available for the fattening of stock by feeding of summer fodder crops and natural and introduced pastures. The better quality meats fattened under these intensive methods and the greater regularity of supply will materially assist to overcome some of the disabilities which have affected the meat industry up to the present. Arrangements for drought feeding, transport and treatment works will be made more economical and will permit the delivery of a high quality product on the overseas markets more closely competitive with foreign meat than has been the case in the past.

While the trend of development of the export beef industry is clear in so far as increasing quantities of chilled and frozen beef, veal, canned meats, hides, and tallow, etc., will be available for export, some doubt has been expressed in regard to the economics of fat lamb production in the State (Royal Commission on Abattoirs and Meatworks, Queensland, 1945). However, irrigation projects are contemplated which may lead to the increased production of this product on an economic basis.

The pig industry is of particular importance and is dealt with below.

THE PIG INDUSTRY.

Australia became a regular exporter of pig meats only after the Ottawa Conference. Prior to 1931, intermittent shipments had been made but usually prices did not permit profitable export.

The Ottawa Agreement regarding the regulation of supplies from foreign countries and the Dominions was superseded by the institution of a Bacon Marketing Scheme by the British Government. The scheme aimed at creating a regular market for home producers of bacon pigs and necessitates adjustment of foreign supplies to conform with British bacon factories' requirements after estimated home and Dominion production is provided for. The allocation of this trade to Australia provided for a steady expansion up to 1939.

Supplies from Australia of frozen pork carcases which can be cured by bacon factories in Britain help to fill in the months of slack production in Britain and give factories a chance to maintain production throughout the year and thus reduce overhead. The peak production

period in Queensland, October-March, coincides with the slack period in Great Britain. This trade has led to the development of the treatment of pigs in Central Queensland and has widened the market for producers.

The pig industry has increasingly become an outlet for the marketing of grains, and it might be noted that numbers of pigs slaughtered in Queensland have risen more rapidly than has butter production, indicating that this industry is becoming something more than a sideline to dairying. This is shown in Table 9:—

TABLE 9.

Year.	Pigs Killed.	(a) Butter.	Year.	Pigs Killed.	(a) Butter.
		Lbs.			Lbs.
1931–32 ..	416,715	97,602,853	1936–37 ..	573,981	84,401,372
1932–33 ..	383,543	93,312,321	1937–38 ..	491,832	114,941,221
1933–34 ..	392,732	110,607,700	1938–39 ..	530,453	154,377,535
1934–35 ..	448,469	133,402,841	1939–40 ..	614,339	139,795,042
1935–36 ..	521,664	115,703,863	1940–41 ..	711,557	117,081,269

(a) Factory production.

During the war various agreements were made in regard to the export of pig products and were subject to annual variations according to existing needs, the shipping position and so on. The British Ministry of Food has announced that it will accept Australia's exportable surplus of pigmeats up to September 30th, 1947. The British Government has requested that production for export be concentrated on baconer type pigs and it does appear that the future expansion of the export trade depends upon this type rather than on the lighter weight porker pigs.

General.

From the foregoing outline of the Queensland meat trade it is clear that in the past the development of the industry has been intimately bound up with favourable treatment in the world's most important meat market—the United Kingdom—and, of all Australian States, Queensland has been the most affected by variations in this market.

The value of this preference to Queensland is shown by the following:—

Beef.—Beef and beef products accounted for 90 per cent. of Queensland's exports of meat to the United Kingdom prior to the war. In the year 1938-39 tariff preference on beef represented a value of £740,721 made up as follows:—

	£
Frozen beef	397,888
Chilled beef	225,860
Other beef and veal	116,973
	£740,721

Pigmeats.—Pigmeats are not dutiable by the United Kingdom but imports were subject to the Bacon Marketing Scheme which limited foreign imports to permit both home and Dominion supply ready access

to the market. The value of this preference to the Queensland industry is illustrated by the fact that the value of exports from Queensland to the United Kingdom increased from £67,698 in 1932-33 to £897,037 in 1939-40.

The progress of land settlement in Queensland, in which the rehabilitation of returned men will play an important part, will lead to more intensive methods of stock raising. Better pastures and nutrition, improved methods of disease control and advances in processing and transport will tend towards a product of a high quality. Developments of this nature cannot, however, be expected in the absence of an assured market.

The ability of Queensland to produce bacon carcases and to ship to Great Britain at a period of the year when processing plants are slack, points to the need for every encouragement to be given to this trade by continuing some form of long term agreement such as obtains at present. In this way producers will be encouraged to plan ahead, to establish proper feeding methods, and to develop the type of carcase that is required by the United Kingdom market.

Throughout the meat industry, which is essentially one in which planning has to be on a long term basis, there is a need for stability which will advantage both producer and consumer and which can only be assured by adequate agreement between the industry and its market.

TABLE 10.

EXPORTS OF MEATS FROM QUEENSLAND TO UNITED KINGDOM 1932–33—1939–40.

Year ended 30th June.	Pork.		Bacon and Ham.	
	Quantity.	Value.	Quantity.	Value.
	Lbs.	£	Lbs.	£
1932–33	3,063,967	67,684	387	14
1933–34	4,797,045	113,907	4,197	97
1934–35	8,723,856	215,659	547	20
1935–36	11,544,173	279,879	23,879	805
1936–37	9,547,791	248,905	11,876	261
1937–38	14,575,714	412,790	59,285	2,745
1938–39	17,746,543	491,550	167,739	5,188
1939–40	31,011,308	888,903	272,611	8,134

Year ended 30th June.	Mutton.		Lamb.	
	Quantity.	Value.	Quantity.	Value.
	Lbs.	£	Lbs.	£
1932–33	8,276,566	94,404	1,244,602	19,384
1933–34	4,605,626	67,428	301,684	6,610
1934–35	10,266,185	176,509	982,574	27,166
1935–36	2,749,008	51,256	587,773	17,459
1936–37	4,817,253	82,172	857,612	24,801
1937–38	5,556,004	95,551	859,499	24,515
1938–39	2,232,559	34,344	1,717,603	46,841
1939–40	4,690,742	67,451	2,687,331	69,831

TABLE 11.

EXPORTS OF MEAT FROM QUEENSLAND TO UNITED KINGDOM.

1932-33—1939-40.

BEEF.

Year ended 30th June.	Frozen Beef		Chilled Beef.		Veal		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Lbs.	£	Lbs.	£	Lbs.	£	Lbs.	£
1932–33	..	..	..	..	..	..	101,543,944	1,210,517
1933–34	..	..	..	..	..	..	131,383,088	1,524,998
1934–35	139,263,783	1,571,269	18,540,064	268,626	3,338,249	51,677	161,142,096	1,891,572
1935–36	108,235,065	1,317,047	21,894,680	326,114	4,501,270	64,107	134,631,015	1,707,268
1936–37	134,116,839	1,652,593	39,351,292	566,970	4,616,705	65,093	178,084,836	2,284,656
1937–38	159,081,797	2,202,807	56,873,524	940,588	7,298,382	117,149	223,253,703	3,260,544
1938–39	144,591,712	2,207,592	57,820,114	966,336	6,890,542	103,524	209,302,368	3,277,452
1939–40	181,390,009	3,024,531	12,427,472	199,392	7,168,567	126,712	200,986,048	3,350,635

TABLE 12.

EXPORTS OF MEAT FROM QUEENSLAND TO UNITED KINGDOM.

1932–33—1939–40.

OTHER MEATS.

Year ended 30th June.	Rabbits.		Poultry.		Tinned Meat.		Salted Meat, &c.		Potted and Concentrate.		Other.		Total Value.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Pairs.	£A.	Pairs.	£A.	Lbs.	£A.	Lbs.	£A.	Lbs.	£A.	Lbs.	£A.	£A.
1932–33 ..	908,266	53,892	..	..	322,931	9,201	..	..	..	2,667	4,811,237	78,676	144,436
1933–34 ..	1,153,621	69,699	210	41	128,573	5,497	..	..	..	2,242	5,445,140	92,970	170,449
1934–35 ..	991,363	59,751	214	103	1,204,964	28,155	2,240	46	..	1,575	8,124,322	123,030	212,660
1935–36 ..	763,389	45,533	..	..	1,358,700	33,484	25,984	687	..	3,248	7,818,303	116,575	199,527
1936–37 ..	203,578	8,970	..	..	3,589,642	115,767	..	..	..	..	9,606,500	163,092	287,829
1937–38 ..	53,622	2,579	..	..	5,286,976	171,225	13,104	311	..	5,424	11,432,998	189,593	369,132
1938–39 ..	207,492	8,234	..	..	8,793,642	288,856	..	..	..	4,687	10,548,769	192,487	494,264
1939–40 ..	595,049	30,426	..	..	10,645,297	422,342	..	..	..	3,489	13,258,161	255,610	711,867

TABLE 13.

LIVE STOCK POPULATION—QUEENSLAND.
1931—1939.

At 31st December.	Number of Livestock.		
	Cattle.	Sheep.	Swine.
1931	5,550,399	22,324,278	222,686
1932	5,535,065	21,312,865	213,249
1933	5,781,170	20,072,804	217,448
1934	6,052,641	21,574,182	269,873
1935	6,033,004	18,060,093	304,888
1936	5,950,572	20,011,749	290,855
1937	5,959,165	22,497,970	282,941
1938	6,097,089	23,158,569	325,326
1939	6,198,798	24,190,931	391,333

WOOL.

In the House of Representatives on 30th August, 1945, the Prime Minister announced that the Governments of the United Kingdom, Australia, New Zealand, and South Africa had agreed upon a plan for the post-war marketing of Dominion-grown wool. Consequently, the question of retention of Empire Preference on wool does not arise at this juncture. However, in order that the export position with respect to this commodity may be viewed in relation to that of other rural products, the principles of the wool marketing plan and its method of operation have been summarised as follows:—

During the war, the United Kingdom purchased all Australian and New Zealand wool, and supported the market for South African wool. Resulting from those purchases and from the war-time trading transactions, the United Kingdom Government possesses an accumulated surplus of Dominion-grown wool, amounting to 10,000,000 bales. The plan adopted, in addition to providing for the sale of those accumulated stocks, contains price safeguards for all clips coming forward each year during the period of disposal. During that period, the four Governments will meet yearly and decide, for the following year, the general level of reserve prices for wool, below which sales will not be made either from stocks or from current clips. Arrangements will be made to buy in and hold any wool of current clips which does not find commercial buyers at the reserve prices or better; and to sell, at appropriate prices, wool now in stock and wool bought in during the operation of the plan. The speedy disposal of the accumulated stocks will depend on the continuance of an active trade in wool sufficient to absorb, at not less than the reserve prices, the equivalent of each current clip and some wool from accumulated stocks.

The method of marketing adopted under this plan differs from both the pre-war and the war-time methods. Prior to the war, wool was sold at auction without any intervention by Governments, or any protection of the grower from the vagaries of the market. During the war, the Government used the war-time power of acquisition and paid to growers prices decided by appraisement, and based on the flat rate price paid by the United Kingdom for all Australian wool. Under the plan which has now been adopted the growers' general reserve price takes the

place of the war-time flat rate purchase price. Each grower's wool is appraised, and that appraisement decides his reserve price. Wool is sold at auction, and if the return from auction, after meeting the contributory charge, exceeds the reserve price, the grower reaps the benefit of the market. If the best price offered at auction by a commercial bidder is less than the reserve price, after provision is made for the contributory charge, the organisation buys in the wool and the grower is paid the appropriate reserve price. In each case, the grower meets his selling costs as he did under the war-time system of appraisement and acquisition.

The principal object of the plan is to protect woolgrowers against the serious fall in price which would undoubtedly occur if the accumulated stocks were unloaded on the market indiscriminately. The plan amounts to the underwriting of the income of Dominion wool producers during the next fourteen years or thereabouts. That period is based on an estimated increase of about 20 per cent. in the world's consumption of wool. If the increase exceeds that estimate, the period will be shorter, but if consumption does not increase to that degree, the period will naturally be longer. The plan is, in its effects, an international one, though it is at present confined in its active provisions to Empire countries. It is the first of such plans to be agreed upon for post-war operation.

TABLE 14.

THE FOLLOWING TABLE SHOWS THE WOOL EXPORTS FROM QUEENSLAND TO THE UNITED KINGDOM FOR THE PERIOD 1932–33 TO 1939–40.

Year ended 30th June.	Greasy.		Scoured.		Wool on Skins.		Total Value.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Lbs.	£A.	Lbs.	£A.	Lbs.	£A.	£A.
1932–33	28,216,589	1,077,113	11,036,585	650,799	606,849	10,317	1,738,229
1933–34	29,704,411	1,925,401	10,569,890	983,614	560,879	16,652	2,925,667
1934–35	35,860,489	1,621,998	12,508,215	955,001	449,914	10,046	2,587,045
1935–36	24,419,010	1,475,960	8,775,317	708,182	151,410	5,557	2,189,699
1936–37	40,033,598	2,786,575	7,209,193	716,757	148,105	6,717	3,510,049
1937–38	51,299,581	3,058,985	7,534,614	707,909	306,016	13,303	3,780,197
1938–39	58,773,242	2,741,366	8,454,185	639,230	53,830	1,362	3,381,958
1939–40	102,736,438	6,132,512	10,595,782	1,000,395	324,392	8,511	7,141,418

SUGAR.

Queensland sugar was first exported in any quantity in 1924 and the value of this export trade increased until in the year 1939-40 it exceeded £6,000,000.

Queensland contains 95 per cent. of the total acreage planted to sugar cane in Australia, the remaining 5 per cent. being located in New South Wales. Of the thirty-five raw sugar mills in the two States thirty-two are located in Queensland.

Table 15 shows the production of sugar in Queensland, the total production for Australia, the quantity exported, and the value thereof for the years 1932-33 to 1939-40.

The development of the sugar cane industry in Queensland has been concomitant with the development of the Northern Coastal Belt of this State. The stabilisation of this industry and its protected development in that area were among the outstanding considerations that led to the federation of the Australian States.

TABLE 15.

CANE SUGAR.

Year.	Queensland Production.	Australian Production.	Exports from Australia.	Value of Exports.
	Tons.	Tons.	Tons.	£A.
1932–33	514,027	532,594	187,061	1,490,036
1933–34	638,559	666,145	307,980	2,295,203
1934–35	611,161	640,589	306,497	2,195,893
1935–36	610,080	646,541	300,680	2,758,170
1936–37	744,676	782,834	406,250	3,707,360
1937–38	763,242	810,319	427,184	4,026,698
1938–39	778,064	823,086	443,021	4,177,741
1939–40	891,738	928,621	524,432	6,185,992
8 year average ..	693,943	728,841	362,888	3,354,637

Ever since Federation the Commonwealth Government has encouraged the development of this industry by the imposition of protective tariffs and by legislation and agreements for stabilising the internal price of the commodity.

The development of the industry led to the closer settlement and collateral development of transport and other facilities on the North Queensland coast. The value of the fixed assets directly connected with raw sugar production in Queensland is estimated to be in excess of £30,000,000 while directly and indirectly no fewer than 200,000 people are dependant upon sugar production, processing and marketing for their livelihood.

By a system of pooling and a stabilised Australian consumption price the fluctuations in the world parity price of sugar, although they directly affect Queensland's export price, are spread over the whole crop so that the net return to the grower is an average price based on the total net returns for that season.

Until 1937 Queensland was able to dispose of the whole of her exportable surplus of sugar in the Empire markets, chiefly Great Britain but in that year in terms of the International Sugar Agreement, the Australian exports were fixed at a basic quota of 400,000 tons per annum for the five years from 1st September, 1937. This quota was subject to increases from year to year in proportion to any increases in consumption that took place in the Imperial preferential markets. The International Sugar Agreement was signed in London in May, 1937, by the representatives of twenty-one nations whose countries produced about 29,000,000 tons of sugar per annum out of a world total of about 30,000,000 tons.

Until the outbreak of the war this quota was the controlling factor in Queensland export trade and the agreement had effectively fulfilled its object of controlling and regulating the international movements of sugar.

With the advent of the war the operation of the International Agreement was suspended, and although the Agreement has been continued in pro-forma existence by annual protocols, it no longer operates as an effective regulator in international sugar marketing.

International transactions in sugar remain largely on the bulk purchase system developed during the war. The whole of the Australian exportable surplus has been purchased since 1940 by the British Ministry of Food who have also arranged to purchase all the sugar available for export from the 1946 and 1947 crops.

In 1919, following the acute shortage of sugar experienced through the British Empire as a whole during the 1914-18 war, the British Government accorded a preferential tariff of £3 15s. sterling per ton on Dominion sugar, and, except for one year, this rate of preference has operated ever since.

Preference is also accorded Australian sugar by the Canadian Government, the value of the preference in this market being £4 13s. 4d. sterling per ton.

In 1938-39 Great Britain absorbed 88 per cent. of Australia's sugar exports and Canada 11 per cent. The value of the preference accorded to Australian sugar in that year was £A1,830,152 and £A293,300 respectively.

It was on the basis of this preference that the export trade in sugar was built up and has been maintained. The whole of our exportable surplus, except for occasional negligible quantities, is sold within the British Empire.

The continuance of this export trade in sugar beyond the present period of world shortage is entirely dependant upon the retention of Empire preference since Queensland faces two tremendous handicaps as a world exporter of sugar, namely, she employs a white population enjoying a high standard of living while rival production depends almost entirely on coloured labour working on a much lower scale of subsistence, and she is farther away geographically than any other large producer from the largest and most lucrative markets.

Even with the present general shortage of sugar the current Cuban export quotation is about the same as the wholesale home consumption price in Australian capital cities—£33 4s. per ton.

FRUIT.

Except for small pre-war shipments of apples to the United Kingdom, grapes to eastern ports, and fresh pineapples to New Zealand, overseas export of fruit from Queensland has always been confined to the canned product. Excluding the Stanthorpe area, conditions suitable for fruitgrowing in this State occur mainly along the coast. For climatic reasons, therefore, the kinds of fruit which can be grown commercially in Queensland are chiefly those which flourish under tropical or sub-tropical conditions. In the main, fresh tropical fruits do not lend themselves to transport over long distances, nor except in the case of pineapples, are they suitable for canning. Among Australian States, Queensland enjoys a virtual monopoly with respect to the production of pineapples and, prior to the disruption of overseas trade by the war, canned pineapple constituted by far the largest part of the fruit exports from this State. This fact is shown in Tables 16-18 of Fruit Exports from Queensland to the United Kingdom for the period 1932-33 to 1939-40.

TABLE 16.

QUANTITIES OF FRUITS AND FRUIT PRODUCTS EXPORTED TO THE UNITED KINGDOM FROM 1932–33 TO 1939–40.

Year ended June 30th.	Apples.	Other Fresh Fruit.	Preserved Pineapples.	Other Preserves.	Dried Fruits.	Fruit Juices.	Fruit and Vegetable Pulp.
	Cental.	Cental.	Lbs.	Lbs.	Lbs.	Gals.	Lbs.
1932–33 ..	6,406	1	2,138,579	500	192	..	1,154
1933–34 ..	14,762	20	2,546,180	300	..	2,648	4,656
1934–35 ..	2,015	14	1,588,426	48	..	5	..
1935–36 ..	10,428	..	1,016,924	9,953	6,580	..	..
1936–37 ..	7,960	..	750,395	43,702	2,637	..	2,000
1937–38 ..	8,391	..	1,160,538	16,358	1,288	12,707	41,000
1938–39 ..	8,520	..	2,498,765	34,144	3,500	245	..
1939–40 ..	10,768	..	3,330,663	19,400	..	3,661	..

TABLE 17.

VALUE OF FRUITS AND FRUIT PRODUCTS EXPORTED TO THE UNITED KINGDOM FROM 1932–33 TO 1939–40.

Year ended June 30th.	Apples.	Other Fresh Fruit.	Preserved Pine-apples.	Other Preserves.	Dried Fruits.	Fruit Juices.	Fruit and Vegetable Pulp.	Total Value.
	£	£	£	£	£	£	£	£A.
1932–33 ..	5,397	5	39,058	16	6	..	71	44,553
1933–34 ..	12,420	14	44,484	9	..	1,364	123	58,414
1934–35 ..	1,495	15	28,234	1	..	2	..	29,747
1935–36 ..	8,462	..	19,814	234	242	..	..	28,752
1936–37 ..	6,583	..	15,657	923	169	..	55	23,387
1937–38 ..	8,070	..	24,424	337	85	1,124	588	34,628
1938–39 ..	7,653	..	51,664	808	178	44	..	60,347
1939–40 ..	11,563	..	74,794	370	..	832	..	87,559

Other than canned pineapple and pineapple juice, the only canned fruit exports of consequence have been relatively small shipments of canned tropical fruit salad to the New Zealand market. Tropical fruit salad, in which pineapple is the principal ingredient, is a relatively recent introduction for which a keen demand has already developed in Australia and which, until shipments were interrupted by the war, was also becoming popular in New Zealand.

Pre-war, the principal overseas markets for Queensland canned pinenapple were the United Kingdom and Canada. During the period 1934-39, that is, until overseas trade was disrupted by the war, an average of 53.4 per cent. of the yearly exports went to the United Kingdom, 38.2 per cent. to Canada, and 4.3 per cent. to New Zealand, the remaining 4.1 per cent. going to various destinations. Table 18 shows the exports during this time, in lbs. of fruit, and the value thereof in £'s (Australian).

The reason why the bulk of the pre-war export trade was carried out with the United Kingdom and Canada was that these were the only countries which accorded preferential tariffs to the Queensland product.

TABLE 18.

OVERSEAS EXPORTS OF CANNED PINEAPPLE.

Year.	United Kingdom.	Canada.	New Zealand.	Miscellaneous.	Total.	Value.
	Lb.	Lb.	Lb.	Lb.	Lb.	£A.
1932–33 ..	2,138,579	714,187	..	23,742	2,876,508	54,140
1933–34 ..	2,546,180	1,384,006	612	18,414	3,949,212	72,800
1934–35 ..	1,588,426	2,144,963	66,464	18,833	3,818,686	69,282
1935–36 ..	1,016,924	373,735	142,025	201,694	1,734,378	31,619
1936–37 ..	750,395	827,374	175,826	142,122	1,895,717	38,454
1937–38 ..	1,160,538	1,028,353	121,828	73,476	2,384,195	50,207
1938–39 ..	2,498,765	642,191	50,606	104,076	3,295,638	69,039
1939–40 ..	3,330,663	1,431,828	34,239	84,781	4,881,511	111,957

Tariff preference on canned pineapple from Empire sources entering the United Kingdom was at first confined to preferences on the sugar content. In March, 1932, however, a duty of 10 per cent. *ad valorem* was placed upon foreign imports, while Empire production (including that from Malaya) was exempt, except in respect of the sugar content on which a preferential rate was charged. Under the Ottawa Agreement, made late in 1932, the duty on foreign imports of canned pineapple into the United Kingdom was raised to 15 per cent., and was made exclusive of the duty on sugar content; this increased the net preference on Empire-grown pineapple to approximately 17 per cent. *ad valorem*. The 1932 tariff remained in operation until the first of January, 1939, when, under the terms of the Trade Agreement which Great Britain had made with the United States, the duty on canned pineapple from foreign sources was changed to 5s. per cwt. (1s. per doz. 30-oz. cans), exclusive of the duty on the sugar content. This amended preference represented a concession equivalent to approximately 6d. per cwt. in favour of the Hawaiian product, which dominated the pre-war market for high-grade canned pineapple in the United Kingdom.

From the time of the Australia-Canada Trade Agreement of 1931, until the Ottawa Agreement late in 1932, the import duty on Queensland sliced canned pineapple entering Canada was at the rate of 1 cent. per lb., while on the Malayan and Hawaiian products it was 3 and 4 cents per lb. respectively. Under the Ottawa Agreement, however, the Canadian duty on Malayan canned pineapple was reduced to the same level as that for Queensland, namely 1 cent. per lb. In 1936, the Canadian Government abolished the duty on Queensland canned pineapple entirely, while retaining that on Malayan and Hawaiian, thus giving the Queensland product a preference of 1 cent. per lb. over that from Malaya and 4 cents per lb. over that from Hawaii. These rates continued in operation until 1939, when the duty on Hawaiian canned pineapple was reduced by 1 cent. per lb.

That pre-war export trade in Queensland canned pineapple depended largely on the preferential treatment accorded the product in the United Kingdom and Canada is shown by the way the trade was affected by tariff adjustments in these countries. In the financial year 1931-32, for example, the Queensland product enjoyed a preference in Canada over similar lines from Hawaii and Malaya of 2s. 1½d. and 1s. 6d. respectively per dozen 30-oz. cans, and this market absorbed 88 per cent. of the exports (61,214 cases) compared with 12 per cent. (8,514

cases) marketed in the United Kingdom where preferences did not begin to operate until March, 1932. In the financial year 1932-33, however, during a large part of which the Ottawa Agreement was effective, the position was reversed and 74 per cent. of the exports (47,524 cases) were marketed in Great Britain and only 25 per cent. (15,871 cases) in Canada. (As noted in the preceding two paragraphs, the Ottawa Agreement gave increased preference to Queensland canned pineapple in the United Kingdom but abolished the preference which it had formerly enjoyed over the Malayan product on the Canadian market.) Though the ratio of Queensland exports which the United Kingdom and Canada absorbed became less disproportionate as further tariff adjustments were made in each of them, the former remained the principal market until wartime shipping difficulties diverted most of the trade to Canada.

Having regard to pre-war experience in the export of Queensland canned pineapple and the rise in costs of production which have taken place in the meantime, it is probable the resumption of overseas trade in this commodity will be dependent in large part on the continuance of preferential tariffs in the United Kingdom and Canadian markets. Provided adequate protection and encouragement is afforded in this direction however, there is every reason to believe that the industry could be expanded in Queensland to a degree where it could supply the whole of the Empire's requirements for high-grade canned pineapple, estimated at 500,000 cases annually, excluding Australian consumption. Such expansion would add to the security of the Commonwealth and of the Empire by encouraging closer settlement in the areas where it is most needed, viz., the northern coastal districts of Queensland. On the other hand, withdrawal of the existing preference would hinder and possibly entirely prevent expansion of the industry on economic lines, while it might also seriously endanger the financial stability of many of those already engaged in the cultivation of this crop.

Plate 108.
TULLY SUGAR MILL, NORTH QUEENSLAND.

General Marketing Notes for May, 1947.

"Farmers now face three major problems. The first is the problem of adjusting their production away from the wartime pattern and over to peacetime requirements. The second is the problem of maintaining market outlets on a permanent basis that will make full use of their ever-increasing productive capacity. And, finally, there is the need for maintaining and restoring soil fertility for the long pull ahead."—Clinton P. Anderson, Secretary of Agriculture, United States Department of Agriculture.

The British Parliament passed its first *Agricultural Marketing Act* in 1931, and marketing boards were set up for a number of commodities. A variant of the type of organised marketing originated in Queensland was adopted, particularly the principle of compulsory co-operation. It is interesting to note that the United Kingdom Government has now appointed a committee to review the working of the agricultural marketing laws and to consider what modifications of the provisions of those measures for the organization of producers are desirable in the light of experience before 1939 and of developments during the war and subsequently in government policy as it effects food and agriculture.

Production Trends.

Dairy production is declining as herds are completing their lactation period, but quality is improving as a result of the cool weather. Large acreages of winter fodder crops are available, and grazing-off has now commenced.

With the exception of the Innisfail area, rainfall in the sugar districts during May was generally light and crops made only slow progress. The 1947 crop is not expected to be much better than the 1946 crushing.

Late maize crops are showing promise of good yields, and it is expected that total production for all districts will approximate 2,500,000 bushels. The Atherton Tableland crop is not now expected to reach the 19,000 tons previously estimated.

Apart from early plantings, very satisfactory yields have been obtained from grain sorghum on the Darling Downs, and it now appears that the total yield for Queensland will be at least 3,000,000 bushels.

Early crops of wheat have germinated well. Large areas are now being sown under ideal conditions.

A record peanut crop of 20,000 tons is expected from an approximate area of 42,000 acres. Unsuitable weather has delayed threshing.

Egg supplies improved during May. This may indicate recovery from the effects of poor feeding during the pullets' growing period. The grain position is now better, although bran, pollard and meatmeal are still in short supply.

QUEENSLAND SHOW DATES FOR 1947.

July.

Charters Towers	1st, 2nd, and 3rd
Barcaldine	2nd and 3rd
Bowen	2nd and 3rd
Kilcoy	3rd and 4th
Ayr	4th and 5th
Townsville	8th, 9th, and 10th
Rosewood	11th and 12th
Cleveland	18th and 19th
Ingham	18th and 19th
Nambour	10th, 11th, and 12th
Gatton	18th and 19th
Cairns	22nd, 23rd, and 24th
Tully	25th and 26th
Atherton	29th and 30th
Crow's Nest	30th and 31st
Laidley	25th and 26th
Innisfail	31st, and 1st and 2nd Aug.

August.

Goombungee	2nd
Lawnton	1st and 2nd
R.N.A., Brisbane	9th to 16th

September.

Kandanga	5th and 6th
Malanda	5th and 6th
Canungra	6th
Rocklea	13th
Beenleigh	19th and 20th
Pomona	19th and 20th
Southport	27th

October.

Nerang	3rd

GENERAL NOTES

Staff Changes and Appointments.

Following the appointment of Mr. A. F. Bell, M.Sc. (Calif.), D.I.C. (Lond.), A.A.C.I., as Assistant Under Secretary (Technical) in the Department of Agriculture and Stock, and the allocation to him of responsibilities associated with that position, it was found necessary to relieve him of certain of the duties associated with the position of Director of Sugar Experiment Stations. Mr. E. R. Behne, B.Sc., M.Sc. (Applied), A.A.C.I., was appointed as Assistant Director of Sugar Experiment Stations and Chief Mill Technologist, and has carried out these duties since May, 1945.

An Executive Council Minute has been issued relieving Mr. Bell of the appointment of Director of Sugar Experiment Stations, and appointing Mr. Behne as Director.

Mr. P. A. Gordon, Inspector, Division II., Division of Animal Industry, has been transferred from Brisbane to Helidon, and Mr. H. W. O'Dea, Inspector, Division II., on probation, has been transferred from Brisbane to Atherton.

Mr. William Webster, B.V.Sc., H.D.A., at present Divisional Veterinary Officer in the New South Wales Department of Agriculture, has been appointed Director on probation in the Division of Animal Industry.

Mr. J. C. J. Maunder, B.V.Sc., Divisional Veterinary Officer, who has been Acting as Chief Inspector of Stock, has been appointed Chief Inspector of Stock and Chief Inspector of Slaughterhouses in the Division of Animal Industry.

Mr. T. W. Lowry, Inspector, Horticulture Branch, has been appointed Senior Inspector, Horticulture Branch, as from 1st July, 1947.

The following appointments have been made in the Dairying Division, Department of Agriculture and Stock:—

Mr. S. E. Pegg, Q.D.D., Senior Adviser in Dairying, Brisbane, has been appointed Senior Adviser (Herd Testing);

Mr. F. C. Coleman, Q.D.D., Senior Adviser in Dairying, Gladstone, appointed Senior Adviser in Dairying, Brisbane;

Mr. G. R. Sigley, Q.D.D., Adviser in Dairying, Oakey, appointed Senior Adviser in Dairying, Toowoomba. Mr. Sigley will succeed Mr. E. C. Olive, Senior Adviser, Toowoomba, who retires from the Public Service on 31st March;

Mr. W. J. Park, Q.D.D., Adviser in Dairying, Pittsworth, appointed Senior Adviser in Dairying, Dalby;

Mr. W. A. G. Haylett, Q.D.D., Q.D.S., Dairy Officer, Biloela, appointed Adviser in Dairying, Oakey; and

Mr. P. McCallum, Dairy Officer, Toowoomba, who has been appointed Adviser in Dairying, Pittsworth.

Mr. G. C. Simmons, B.Sc., Assistant to Bacteriologist, Animal Health Station, Yeerongpilly, has been appointed Assistant Bacteriologist at the Station.

Mr. J. E. Ladewig, Q.D.A., B.Sc.Agr., has been appointed Soil Conservationist within the Department of Agriculture and Stock.

In furtherance of the policy of expansion in the Sheep and Wool Branch of the Department of Agriculture and Stock, the following appointments in that branch have been announced:—

Mr. H. Pope, Adviser, has been appointed Senior Adviser in the Sheep and Wool Branch, Department of Agriculture and Stock, St. George.

Messrs. D. J. McK. McKerrow (Barnsdale, Oorindi, N.Q.) and M. N. S. Jackson (Wynnum West) have been appointed Senior Advisers in the Sheep and Wool Branch, and will be stationed at Charleville and Winton, respectively.

Mr. E. C. R. Sadler, A.A.U.Q., has been appointed Accountant in the Department of Agriculture and Stock.

Mr. F. Treacy, A.F.I.A., has been appointed Inspector of Accounts under *The Dairy Produce Acts* in the Dairying Division, and Mr. A. J. Everist, Senior Clerk in the Marketing Division and Registrar of Primary Producers' Co-operative Associations.

Certain consequential appointments have also been made in the Marketing and Accounts Branches of the Department.

Mr. N. E. H. Caldwell, M.Agr.Sc., Horticulturist, Division I, in the Horticultural Branch of this Department, has been transferred from Toowoomba to Brisbane.

Sugar-cane Levy.

Under *The Regulation of Sugar Cane Prices Acts, 1915 to 1941*, a levy is declared annually in order to meet the costs of administration of these Acts, and this levy is borne in equal proportions by the canegrower and the millowner. The levy for the 1947-48 season has been fixed at 2d. on every ton of sugar-cane received at a sugar works.

Export Egg Wastage.

In recent years exports of Australian eggs to Great Britain waste caused by bacterial rotting has occurred. One of the main causes contributing to this wastage is the washing of eggs before export. In an endeavour to reduce this loss in the coming season the Federal Department of Commerce and Agriculture proposes that eggs only slightly soiled will be passed for export. Producers, therefore, are urged to restrict the washing to heavily soiled eggs. These, together with the eggs too small in size for export, are to be separately cased and marked "Local." The clean eggs and the slightly marked eggs which have not been washed shall be clearly marked on the cases with the word "Unwashed." These will be graded and repacked at the packing floors for selection for export.

Council of Agriculture.

Because of the constitution of new commodity boards, Orders in Council have been issued under *The Primary Producers' Organisation and Marketing Acts* to provide additional representation on the Council of Agriculture. The Navy Bean Marketing Board and the Queensland Dairymen's State Council will each be entitled to elect a representative to the Council. For the purpose of electing a representative to the Council, the Central Queensland Egg Marketing Board has been grouped with the Egg Marketing Board which has been operating in Southern Queensland for a number of years.

Wild Life Preservation.

An Order in Council has been issued under *The Fauna Protection Acts of 1937*, declaring Binna Burra, near Beechmont, to be a sanctuary for the protection of native birds and animals; also the camping and water reserves, parish of Abingdon, in the Mirani district, to be a sanctuary for the protection of fauna.

Sugar Experiment Stations.

The Governor in Council has approved the reconstitution of The Sugar Experiment Stations Advisory Board for a further period of three years from 1st April, 1947, to 31st March, 1950.

The Hon. H. H. Collins, M.L.A., Minister for Agriculture and Stock, as Chairman, and Mr. A. F. Bell, Director of Sugar Experiment Stations, are the Government Representatives on the Board. Messrs. W. L. Poustie (Silkwood, Innisfail) and L. G. Scotney (Oakwood, Bundaberg) are the representatives of the canegrowers, and Messrs. J. W. Inverarity (Kalamia Estate, Ayr) and J. C. Collier (Amalgamated Sugar Mills Ltd., Pleystowe, Mackay) the representatives of the manufacturers of cane sugar.

Slaughter of Horses.

Regulations under *The Slaughtering Act of 1898* have been amended to provide for the licensing of slaughterhouses for the slaughter of horses only, and to prohibit the slaughter at such slaughterhouses of any stock the flesh of which is intended to be used for the food of man. Provision is also made for the treatment of all horse flesh, to facilitate identification by the public, by spraying or dipping on all surfaces with methyl violet. Furthermore, it is provided that any premises in which horses are slaughtered or in which horse flesh is stored, sold, or otherwise disposed of shall not be used for any other purpose, and that there be displayed in such premises a sign indicating that the horse flesh is available for sale for dogs and cats only, and not for human consumption.

Rural Topics

Colic in Horses—Some Common Causes.

Perhaps the commonest cause of colic in horses is giving the animals food to which they are not accustomed. A sound physiological reason exists for not doing this. It has been proved that the character of the food influences the quantity and quality of the gastric and pancreatic juices. A definite and constant diet produces juices capable of digesting it, but utterly incapable of dealing with sudden changes of food. Under proper conditions, no food will cause colic, although some (as, for example, wheat and barley) are more indigestible than others; but many foods will do so if given in excess, or at the wrong time, such as giving lucerne to a horse that has been starved for a time.

Horses can exist on practically any food that is digestible, provided they are gradually accustomed to it; but to give a horse a full feed of, say, maize, if he has never had the grain before, is to invite digestive troubles that may cause death. Again, grass-fed horses suddenly put on to dry feed on being taken on a long journey get colic, owing to the sudden change of food.

To avoid colic, give food at regular intervals, and see that the food is of good quality and of proved dietetic value. Mouldy corn, damaged oats, or musty hay very often produce colic, while proprietary foods of unknown composition, and frequently of doubtful feeding value also, often do a great deal of harm. Do not give green forage in an immature, fermented, or over-ripe condition.

Bran mixed with maize is a favourite food, but it is much too laxative for a horse in work, and is a frequent cause of an attack of colic. Do not give large quantities of bran to a working horse. Bran is a good food to maintain the contents of the bowels in a soft condition, and to keep them acting, especially during periods of rest.

Do not suddenly alter the amount of food given. It is a common practice to have horses fed up for a day or two prior to severe work, and this causes much intestinal trouble, such as stomach staggers.

Never forget that young horses cannot digest as much corn as old ones. Horses when rested, even for a day or two, should have their food, especially corn, reduced. Neglect to do this is the cause of much colic.

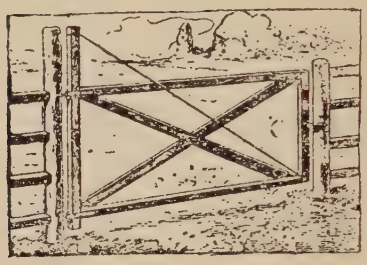
Another common cause of repeated slight attacks of colic, especially with working horses on farms, is the dry, rough, coarse, and indigestible nature of the herbage found in many paddocks. A certain amount of bulky fodder increases the digestibility of the more concentrated foods, such as oats, but too great a quantity of such food greatly weakens the power to digest. A good example of the results of this is seen in so-called "wild melon poisoning." The horse's stomach is not adapted for the digestion of coarse food, and any coarse food that it eats is digested in the large intestines. Farm horses, as a rule, eat far too much rough bulky fodder, and many suffer in consequence. A working farm horse does not require more than 12 lb. of hay a day, and the rest of the ration should be made up of grain, such as oats, or half oats and maize.

Red Poll's Yield—New World Record.

A world's record yield for a Red Poll cow has been put up by a member of the Victorian Department of Agriculture herd at the State Research Farm, Werribee. Under official test, this cow, "Victoria Electricity," has produced in 273 days a total of 16,103 lb. of milk with a test of 4.82 per cent. butter-fat, equivalent to 777 lb. of butter-fat. Officers of the Department of Agriculture believe this to be a world's record for the Red Poll breed for a 273 days' test.

This striking performance recalls the fact that "Muria," one of the foundation cows of the herd at Werribee, in 1915 broke the world's record for the breed for both 273 and 365 days, producing 706 lb. of butter-fat in the 273 days' test and 884 lb. in the full 365 days.

GADGETS AND WRINKLES

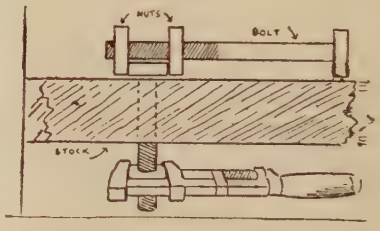


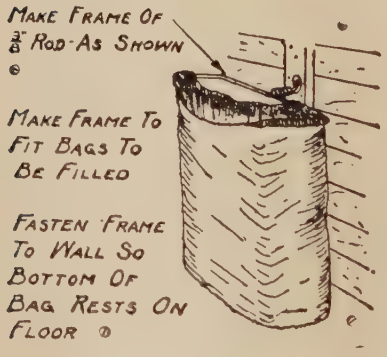
A NON-SAGGING GATE.

A farm gate may be readily prevented from sagging by extending upward the side member to which the hinges are attached, and running one or two strands of fencing wire from the top of this member to the opposite lower corner. The wire may, of course, be attached to the upper corner, but the fastening, as shown, places the least strain on the wire brace.

IMPROVISED WRENCH.

When it is found that a bolt to be removed is turning and there is only one wrench, look in the machine box for a bolt, fit it with two suitable nuts, and use it for a substitute wrench. It works perfectly. The nuts can be adjusted to the size of the nut to be removed by screwing them apart or together.



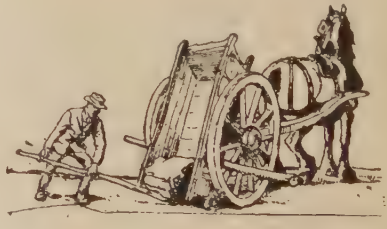


SIMPLE SACK HOLDER.

This shows how to make a handy sack holder out of ⅜-inch iron rod. Any farmer can make it in a few minutes and will find it very convenient to fill a few sacks of grain without help. If there is any trouble with the sack not staying on the rod, two or three snap clothespins or battery clips will remedy it.

ONE-MAN LOADING.

Leave tailboard in, tip cart right back, roll object on to tailboard and tie it there if necessary. Put strong pole right through spokes at rear of both wheels and then start horse forward. The pole lifts the tail of the cart with object inside. Replace tip pin, remove pole and drive on.



Care of Mother and Child.

Under this heading an article supplied by the Maternal and Child Welfare Service of the Department of Health and Home Affairs, dealing with the welfare and care of mother and child, is published each month.

"DOES YOUR CHILD WALK WELL?"

A MOTHER may with advantage look at her child with a critical eye as he trots off to school or kindergarten with his little friends. Pretend that he is Johnny Jones from down the street instead of her own precious little son and see whether she can find anything to criticise in the way he stands or walks or in his general appearance. If she can, then she has ample opportunity to have it corrected while correction is relatively easy.

In the correct standing and walking position, the head is held up, the chest raised and the lower abdomen flattened, the back is almost straight. The knees are straight and without strain and the feet are pointed straight forward. There are several causes of wrong position or posture, but one in particular is faulty shoes. It is almost impossible to wear a faulty shoe without falling into wrong posture in standing and walking. Bad shoes do two things: they twist or misplace the bones of the feet; and they cause pains in both feet, legs, and body, the effect of wrong posture.

Shoes and Stockings.

From early infancy a baby's footwear should be fitted carefully. The beginning of foot deformity may be caused by badly fitting bootees. These should always be roomy and knitted with a square, not a pointed, toe. If they shrink in washing, they should be discarded. Socks and stockings should conform to the shape of the foot and should be one inch longer when new to allow for shrinkage. After washing they should be at least half an inch longer than the foot.

Shoes should be half to three-quarters of an inch longer than the foot when the child is standing in them and a quarter of an inch wider. Before buying shoes for a child it is a good plan to make a tracing of the foot on a piece of paper with the child standing, and then trying the shoe over it so that the right amount of room is provided.

The inner line of the shoe should be straight, not bearing round to a point, and the toe broad enough for the child's toes to move easily. The heels should be low and broad. The leather of the upper part of the shoe should be soft and pliable. The young child often does better in laced boots.

Patent leather shoes are not good as they make the feet perspire; and rubber shoes may not be worn except for sports. Sandals well cut and well fitted are permissible.

Shoes which are too tight or not long enough will cause bunions or corns and callouses. The narrow shoes with a pointed toe causes the feet to turn out and throws a strain on the inner edge of the foot. This tends to break down the arches and cause the condition known as flat foot.

If a child's feet turn outward and his ankles bend inward, a doctor who specialises in this kind of work should be consulted either at the hospital or in private practice. He will probably advise special exercises to strengthen the muscles of the feet and legs and will also advise whether the shoes need adjustment.

It is important to keep shoes in good repair, otherwise they do not give proper support. Shoes which have lost their shape or have become too small should be discarded. In a child's early years shoes are usually outgrown before they are worn out, and it is false economy and cruel to the child to make him continue to wear them.

Any further information on this or any other matter concerning maternal and child welfare may be obtained by communicating personally with the *Maternal and Child Welfare Information Bureau*, 184 *St. Paul's Terrace, Brisbane*, or by addressing letters *"Baby Clinic, Brisbane."* These letters need not be stamped.

BOOKS FOR THE BUSH.

The Bush Book Club is one of those friendly organizations with a practical purpose, it has no axe to grind, no urge to uplift. It exists for the purpose of providing a circulating library for country people living in the remoter places where there are no local public libraries. The only qualification need for membership is described thus: "Dwellers in bush districts who are not within reach of a school of arts or other local library." To join, all that is necessary is to write to the Hon. Secretary, tell her you are not within reach of a school of arts library, mention your nearest railway station, and the sort of books you would like. Each reader pays 2s. 6d. a year and the cost of getting the books from the railway station. The parcel contains ten books, a number of magazines and illustrated papers, and is carried free on the railways. At the end of three months or thereabouts, if you are ready for more, just send word to the Hon. Secretary, and she will arrange for you to exchange with another reader. Do not send the books back to Brisbane or Townsville (there is a branch in that city). This exchange or "pass-on" is then entered in a card index so that parcels do not double back on their journeys.

In each book is pasted a label asking for the co-operation of readers in reporting the condition of the parcels. With travelling long distances by railway, service car, cream truck, or pack bags, there is necessarily a lot of wear and tear so, if a parcel is shabby, let the Hon. Secretary know; for instance, "Five of the books are beyond reading." Right! Then a supplementary parcel with five books and a new set of magazines and newspapers to bring the parcel up to standard size and quality is packed and sent. To keep up this standard of service the Club must have the co-operation of readers.

How is all this done? A committee member is in charge of bands of book-lovers who work for a certain time each day. The work is all voluntary so it has to be fitted in with home chores. Friends and well-wishers send books to the Club regularly, and once a year the committee invites Mr. and Mrs. Brisbane "to come and see the Bush Book Club and to bring a book or two to fill its shelves." The billy boils all day, and all comers are entertained with tea and biscuits. Every year new friends are made for the Club, and thousands of books are obtained. The committee collects the necessary finance (rent, postage, and other expenses, have to be paid) or earns it by entertainments.

It is, perhaps, a small way to pay the city's debt to the country, but the members of the committee are all book-lovers, and so they "say it with books." If there is anything else you would like to know write to the *Hon. Secretary, Queensland Bush Book Club, Victory Chambers*, 249 *Adelaide Street, Brisbane.*

QUEENSLAND WEATHER IN MAY.

During the first three weeks of May the dry spell of April continued over most of the State. Persistent south-east winds accounted for an abnormal number of rain days on the South Coast fringe and far north Tropical Coast, but daily registrations were mostly light. The Darling Downs East commenced to receive scattered benefits after the middle of the month, but the most useful rain distribution occurred between the 24th and 27th, when approximately 1 to 1½ inch totals were registered over the greater part of the south-east quarter of the State with resultant over-average aggregate totals in sections of the Warrego, Maranoa, Downs, Central Coast, and Central Highlands. Parts of the far North Coast were also above average. The rains over agricultural areas of the south-east quarter were particularly opportune, especially in wheatgrowing areas, where sowing commenced on a record 500,000 acres. Normal or light but well spaced rain during winter and spring should bring good harvest results. Over the greater part of southern inland and coastal Queensland improved to good seasonal prospects in all farming pursuits have followed the summer recovery rains and the recent freshening falls. Early seasonal rains had been sufficient for reasonable winter and spring carrying capacity over much of pastoral inland Queensland, but during February and March sections of the Central and Lower West through the Central Interior to parts of the Central Lowlands and Highlands received relatively low or poor totals, and with no rain during April and May local adverse prospects are being maintained.

Pressure.—During the first half of the month the southern low pressure activity belt was located well to the south of the Continent and an almost unbroken series of high pressure centres moved slowly across the southern half of the Continent. The high pressure ridge stretching from eastern Queensland to New Zealand was particularly persistent, maintaining moderate to fresh south-east coastal weather during the first three weeks, and adjacent South Coast and far North Coast districts recorded mostly light showers on more than a normal number of days. By the third week a fairly definite east to north-east upper circulation was developing over Queensland, and on the 22nd a more vigorous southern "low" and colder southerly front moved through the south-west of Western Australia. Trough formation ultimately developed on the 24th and 25th from western Queensland south to the low centre over Victoria and Tasmania, and as the cold front moved into the south-west of Queensland rains developed and spread eastward during the period 25th to 27th. With the advent of another fine weather "high" fine frosty weather prevailed for the last three days with a recurrence of fresh south-east winds on the coast.

Temperatures.—Maximum temperatures were mostly 1 to 2 deg. above normal (2.7 deg. at Thargomindah and 2.8 deg. at Longreach). Mild night temperatures were general up to 3.9 deg. above average at Georgetown and 3.4 at Boulia.

Frosts.—Light and local on Downs highlands, 4th to 7th. Fairly general south-east quarter, 28th to 31st. Bybera screen and grass minimum temperatures 31 deg. to 21 deg., Stanthorpe 26 deg. to 24 deg., and Mitchell 32 deg. to 26 deg. on 31st.

Brisbane.—$\frac{9 + 3}{2}$ 30.183 inches (normal 30.084 inches). Highest mean May pressure since 30.191 in 1901. *Temperature.*—Mean maximum 73.5 deg. (normal 73.6 deg.); mean minimum 57.7 deg. (normal 55.5 deg.); mean temperature 65.6 deg. (normal 64.6 deg.). Highest daily reading 80.4 deg. (8th). Lowest 46.2 deg. (29th). *Rainfall.*—218 points on 17 days (average 274 on 10 days). Highest number of rain days since 1919 included 10 days less than 10 points. *Sunshine.*—215.4 hours (normal 207.0). *Fog.*—Thick night of 26th and early morning of 27th. *Suburbs.*—Scattered mist or fog patches 18 nights.

The rainfall position is summarised below—

Divisions.	Normal Mean.	Mean May, 1947.	Departure from Normal.
	Points.	Points.	Per cent.
Peninsula North	137	49	64 below
Peninsula South	50	1	98 ,,
Lower Carpentaria	38	1	97 ,,
Upper Carpentaria	58	21	64 ,,
North Coast Barron	300	368	23 above
North Coast Herbert	434	586	35 ,,
Central Coast East	165	121	27 below
Central Coast West	81	71	12 ,,
Central Highlands	127	79	37 ,,
Central Lowlands	87	26	70 ,,
Upper Western	51	1	98 ,,
Lower Western	69	22	68 ,,
South Coast, Port Curtis	203	149	27 ,,
South Coast, Moreton	349	282	19 ,,
Darling Downs, East	156	156	Nil
Darling Downs, West	143	141	1 ,,
Maranoa	137	132	4 ,,
Warrego	112	114	2 above
Far South-West	97	49	49 below

Commonwealth of Australia, Meteorological Bureau, Brisbane.

ASTRONOMICAL DATA FOR QUEENSLAND.

JULY.

Supplied by W. J. Newell, Hon. Secretary the Astronomical Society of Queensland.

TIMES OF SUNRISE AND SUNSET.

At Brisbane.			MINUTES LATER THAN BRISBANE AT OTHER PLACES.					
Day.	Rise.	Set.	Place.	Rise.	Set.	Place.	Rise.	Set.
	a.m.	p.m.						
1	6.39	5.03	Cairns	10	48	Longreach	27	43
6	6.39	5.05	Charleville ..	25	29	Quilpie	37	33
11	6.39	5.07	Cloncurry	37	62	Rockhampton ..	2	18
16	6.38	5.10	Cunnamulla ..	31	27	Roma	15	19
21	6.36	5.12	Dirranbandi ..	22	16	Townsville ..	9	40
26	6.34	5.15	Emerald	12	27	Winton	30	51
31	6.31	5.17	Hughenden ..	22	48	Warwick	5	4

TIMES OF MOONRISE AND MOONSET.

At Brisbane.		
Day.	Rise.	Set.
	p.m.	a.m.
1	3.14	4.34
2	3.58	5.29
3	4.46	6.22
4	5.38	7.13
5	6.32	7.59
6	7.27	8.41
7	8.22	9.19
8	9.17	9.53
9	10.12	10.24
10	11.06	10.55
11	..	11.26
	a.m.	
12	12.03	11.58
	p.m.	p.m.
13	1.02	12.33
14	2.05	1.13
15	3.12	1.59
16	4.21	2.54
17	5.30	3.58
18	6.36	5.08
19	7.34	6.20
20	8.24	7.30
21	9.07	8.37
22	9.45	9.40
23	10.19	10.41
24	10.52	11.39
25	11.24	..
		a.m.
26	11.57	12.36
	p.m.	
27	12.33	1.32
28	1.12	2.29
29	1.55	3.24
30	2.42	4.18
31	3.33	5.09

MINUTES LATER THAN BRISBANE (SOUTHERN DISTRICTS).

Charleville 27; Cunnamulla 29; Dirranbandi 19; Quilpie 35; Roma 17; Warwick 4.

MINUTES LATER THAN BRISBANE (CENTRAL DISTRICTS).

Day.	Emerald.		Longreach.		Rockhampton.		Winton.	
	Rise.	Set.	Rise.	Set.	Rise.	Set.	Rise.	Set.
1	29	12	44	26	19	1	52	29
6	27	12	43	26	18	1	51	29
11	19	19	35	36	10	10	41	41
16	11	29	26	44	0	20	28	52
21	14	23	29	39	4	14	33	45
26	25	14	41	30	16	5	47	34
31	30	10	45	24	20	0	53	27

MINUTES LATER THAN BRISBANE (NORTHERN DISTRICTS).

Day.	Cairns.		Cloncurry.		Hughenden.		Townsville.	
	Rise.	Set.	Rise.	Set.	Rise.	Set.	Rise.	Set.
1	52	8	66	36	50	21	43	8
3	54	4	67	33	51	19	44	5
5	52	5	66	34	50	20	43	6
7	44	11	61	38	45	23	37	11
9	35	20	54	44	39	29	29	18
11	30	31	51	51	35	36	25	26
13	20	40	43	58	28	43	17	34
15	10	50	37	63	22	49	9	42
17	5	53	35	66	19	51	5	44
19	8	51	36	64	21	50	8	43
21	17	38	41	57	26	42	15	33
23	27	27	49	48	33	33	23	23
25	38	17	56	42	41	27	32	16
27	47	12	63	28	47	24	39	12
29	53	6	67	34	50	20	44	7
31	54	4	67	33	51	19	44	5

Phases of the Moon.—Full Moon July 3rd, 8.38 p.m.; Last Quarter, July 11th, 8.54 p.m.; New Moon, July 18th, 2.15 p.m.; First Quarter, July 25th, 8.54 a.m.

At the end of July the sun will rise and set about 22 degrees north of true east and true west respectively. On the 5th the Earth will reach the point in its orbit known as aphelion and will then be at its maximum distance from the Sun—94,600,000 miles.

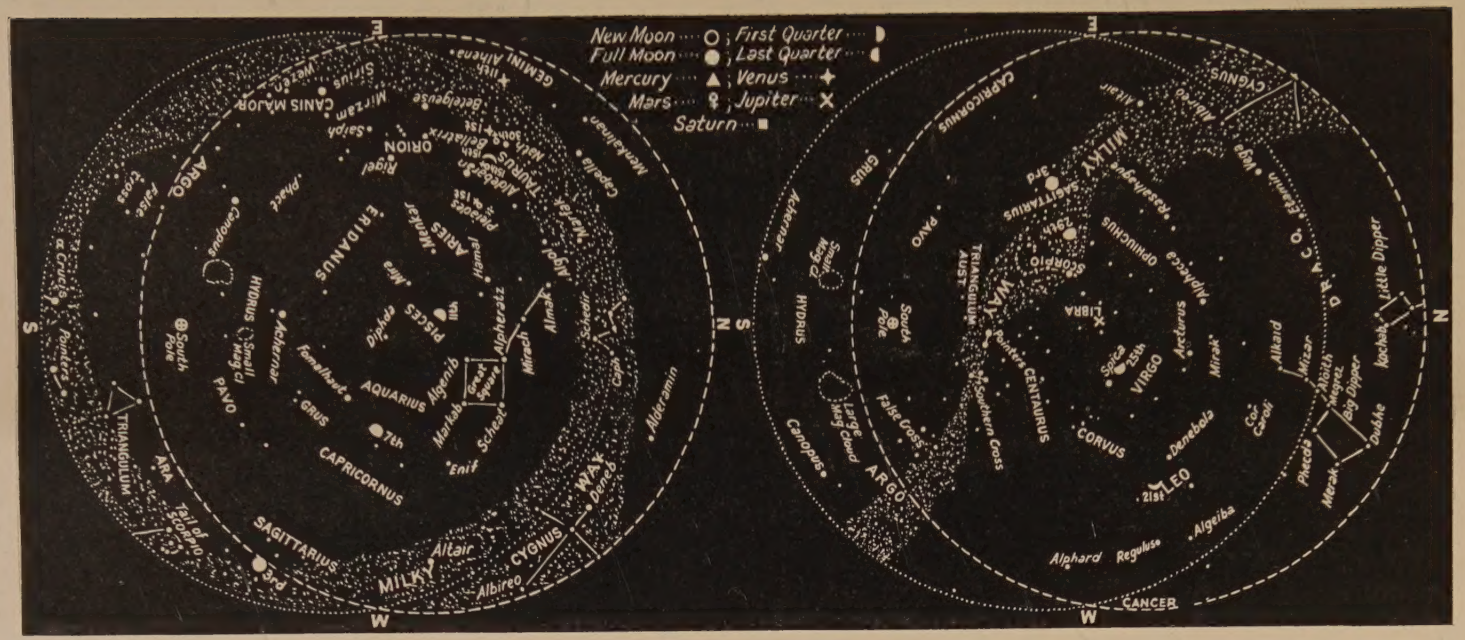
On July 11th and 23rd the moon will rise and set at true east and true west respectively.

Mercury.—All this month will be in the neighbourhood of Castor and Pollux and at the beginning of the month will set about 1½ hours after the sun. Its angle east of the sun gradually diminishes until on the 14th it will be in inferior conjunction. After this date it will move to the west of the sun and will rise over 1 hour before sunrise by the end of July.

Venus.—At the beginning of the month, near Nath, in the constellation of Taurus, will rise about 1 hour 15 minutes before the sun. On the 22nd it will pass 5 degrees to the north of Mercury and at the end of the month, almost in line with Castor and Pollux, will rise only ½ hour before the sun.

Mars.—In the constellation of Taurus will rise between 3.45 a.m. and 4.45 a.m. on the 1st of July and will pass 5 degrees to the north of Aldebaran on the 15th. On the 31st, near Nath, it will rise between 3.30 a.m. and 4.30 a.m.

Jupiter.—In the constellation of Libra, will rise near mid-day at the beginning of July and set between 2.45 a.m. and 4 a.m. At the end of the month it will set about midnight.



Saturn.—At the beginning of the month will set only 2 hours after the sun, and by the end of the month will be too close in line with the sun for observation. Towards the end of October it may be seen low in the east during morning twilight in the constellation of Leo.

Star Charts.—The chart on the right is for 7.15 p.m. in the south-east corner of Queensland to 8.15 p.m. along the Northern Territory border on the 15th July. (For every degree of longitude we go west time increases 4 minutes.) The chart on the left is for 10 hours later. On each chart the dashed circle is the horizon as viewed from Cape York, and the dotted circle is the horizon for places along the New South Wales border. When facing north hold N at the bottom; when facing south hold S at the bottom; and similarly for the other directions. Only the brightest stars are included and the more conspicuous constellations named. The stars which do not change their relation to one another, moving east to west, arrive at any selected position about 4 minutes earlier each night. Thus, at the beginning of the month the stars will be in the positions shown about 1 hour later than the time stated for the 15th and at the end of the month about 1 hour earlier than that time. The positions of the moon and planets, which are continually changing in relation to the stars, are shown for certain marked days. When no date is marked the position is for the middle of the month.

RAINFALL IN THE AGRICULTURAL DISTRICTS.

MAY RAINFALL.

(Compiled from Telegraphic Reports.)

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	May.	No. of years' records.	May, 1946.	May, 1947.		May.	No. of years' records.	May, 1946.	May, 1947.
North Coast.	In.		In.	In.	*South Coast—contd.*	In.		In.	In.
Atherton	2·34	42	2·04	3·32	Gatton College ..	1·53	44	0·21	..
Cairns	4 51	61	4·28	4·29	Gayndah	1·55	72	0·06	0·26
Cardwell	3 64	71	2·11	4·34	Gympie	2·91	73	0·46	1·64
Cooktown	2 76	67	1·80	5·87	Kilkivan	1·85	62	0·44	1·49
Herberton	1·72	57	1·09	0·89	Maryborough ..	3·01	72	1·02	1·94
Ingham	3·76	51	2·97	7·52	Nambour	5·09	47	1·11	3·72
Innisfail	12·39	62	6·62	16·12	Nanango	1·55	61	0·27	2·69
Mossman	3·10	19	3·32	4·84	Rockhampton ..	1·60	72	0·22	1·34
Townsville	1·24	72	0·21	1·04	Woodford	3·03	55	0·46	2·88
Central Coast.					*Darling Downs.*				
Ayr	1·09	56	0·12	1·02	Dalby	1·29	73	0·01	1·32
Bowen	1·28	72	0·99	0.62	Emu Vale	1·12	47	0·40	1·42
Charters Towers ..	0·78	61	0·05	0·81	Jimbour	1 21	64	..	0·90
Mackay	3·86	72	2·92	1·81	Miles	1·51	58	0·13	1·64
Proserpine	4·22	40	1·61	1·91	Stanthorpe	1 75	70	0·97	0·99
St. Lawrence ..	1·74	72	0·04	1·93	Toowoomba	2·14	71	0·25	2·43
					Warwick	1·48	78	0·41	1·80
South Coast.					*Maranoa.*				
Biggenden	1·80	44	0·35	0·61	Roma	1·42	69	0·05	1·38
Bundaberg	2·63	60	0·54	1·75	St. George	1·41	62	0·02	1·25
Brisbane Bureau ..	2·74	95	0·27	2·18					
Caboolture	3 27	67	0·20	2·43	*Central Highlands.*				
Childers	2·17	48	0·60	1·30	Clermont	1·29	72	0·08	0·62
Crohamhurst	5·04	50	1·19	4·43	Springsure	1·23	74	..	1·35
Esk	2·00	56	0·12	1·81					

CLIMATOLOGICAL DATA FOR MAY.

(Compiled from Telegraphic Reports.)

Divisions and Stations.	Atmospheric Pressure Mean at 9 a.m.	Shade Temperature.		Extremes of Shade Temperature.				Rainfall.	
		Mean Max.	Mean Min.	Max.	Date.	Min.	Date.	Total.	Wet Days.
Coastal.	In.	Deg.	Deg.	Deg.		Deg.		Pts.	
Cairns	..	77	68	85	1, 9, 10, 25	63	22	429	16
Herberton	..	62	57	79	7	46	22	89	12
Townsville	..	82	68	86	5, 6	61	20, 21	104	8
Rockhampton	30·14	78	60	84	8	46	31	134	10
Brisbane	30·22	74	58	80	8	46	29	218	17
Darling Downs.									
Dalby	..	74	48	80	8, 9, 10	33	31	132	3
Stanthorpe	..	66	45	76	8	26	31	99	10
Toowoomba	..	67	49	76	7, 10	33	31	243	11
Mid-Interior.									
Georgetown	29·98	87	63	90	26	53	10, 12	..	..
Longreach	30·16	83	55	91	10	46	31	..	..
Mitchell	30·21	74	45	84	8, 9	32	31	102	1
Western.									
Burketown	..	88	65	92	1	57	23	..	..
Boulia	30·11	82	57	90	1	43	31	..	..
Thargomindah	30·18	76	52	83	6, 7	41	30	44	2

A. S. RICHARDS, Divisional Meteorologist.

Commonwealth of Australia,
Meteorological Bureau, Brisbane.